Assembly and installation instructions – Electrical documentation

pelletstar 10 – 60

INTRODUCTION

Dear Customer!

Your heating equipment is powered using HERZ pelletstar boiler equipment and we are delighted to be able to welcome you into the large circle of satisfied operators of HERZ equipment. HERZ solar control is the result of many years of experience and further development. Please bear in mind that even a good product requires the right servicing and maintenance in order to be able to fulfil its functions. Please therefore read this documentation carefully – you will find it worthwhile. Please pay particular attention to the safety notes. It is a precondition of any warranty claim that all operating rules are maintained. Please contact your heating specialist or the HERZ factory customer service in the event of any faults.

Yours sincerely from HERZ

HERZ - Energietechnik

Guarantee / warranty (general)

HERZ boiler systems come with a 5-year warranty on the boiler body, storage tanks and HERZ solar collectors. We generally guarantee freedom from defects of mobile objects purchased for a period of 2 years, to a maximum of 6.000 hours of operation. For non-moving purchased items, the guarantee is generally for a period of 3 years to a maximum for 9.000 hours of operation. Parts subject to wear are excluded from the warranty/guarantee. Furthermore, claims under warranty will not be applicable if there is no return flow temperature boost or it is not working properly, if commissioning[1] is not carried out by specialist personnel authorised by HERZ, in the case of operation without a buffer storage tank with a heating load of less than 70% of the rated output (manually stoked boilers must always be operated with a sufficiently dimensioned buffer storage tank), if hydraulic diagrams[2], not recommended by HERZ are used and if a non-prescribed fuel[3], Wood pellets for non-industrial use after ENplus, Swisspellet, DINplus or ÖNORM M 7135 resp. pellets after EN14961-2; Wood chips after EN 14961-1/4 according to the following specification: Property class A1, A2, B1 respectively G30, G50 according to ÖNORM M7133 resp. log wood is used.

As a precondition for the use of guarantees, annual maintenance by a HERZ authorised specialist applies.

Guarantee work does not affect any extension of the general term of guarantee. A guarantee claim does not delay the due date of our accounts. We only offer a guarantee if all our accounts have been paid for the product delivered.

The guarantee is fulfilled at our discretion via the repair of the purchased item or replacement of faulty parts, exchange or reduced price. The exchanged parts or goods must be sent back to us free of charge at our request. Wages and costs for installation and removal are to be paid for by the purchaser. This applies in the same way to all guaranteed services.

The Supplier shall under no circumstances be liable to the Customer, for any direct, indirect or consequential costs incurred by the Customer for works carried out on HERZ equipment.

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We reserve the right to make technical alterations.

Version 04/2014

[1] Maintenance by the manufacturer

[2] Recommended hydraulic diagrams can be found in the installation manual while hydraulic balancing will be carried out by the heating contractor

[3] Furthermore, the quality of the heating water must be in accordance with ÖNORM H5195 (current version) or VDI 2035

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1 SAFETY NOTES

- Please read the operating instructions carefully prior to start-up and pay particular attention to the safety notes marked. Please consult these instructions for clarification.
- Ensure that you understand the directions in this manual and that you have sufficient information about the functioning of the firematic biomass furnace equipment. HERZ is at your disposal at all times for any questions.
- For safety reasons the operator of the equipment may not alter its construction or condition without the agreement of the manufacturer or its authorised representative.
- Ensure that there is sufficient fresh air supply to the boiler room. (Please take into account the current federal state regulations)
- The gas and liquid tightness of all connecting points is to be monitored before the equipment is started up.
- A portable fire extinguisher of the prescribed size must be placed in front of the boiler room. (Please take into account the current federal state regulations)
- When opening the combustion chamber doors take care that no flue gas and sparks are released. Never leave the combustion chamber door open. Toxic gases may escape.
- Never heat up the boiler with liquid fuels such as petrol or similar.
- Carry out maintenance work regularly (maintenance plan) or use our customer service. (Minimum TRVB maintenance intervals must be adhered to)
- For maintenance of the equipment or when opening the controls, the flow supply must be interrupted and the general applicable safety rules must be adhered to.
- No fuels should be stored outside the equipment in the boiler room Furthermore, items that are not required for the operation or maintenance of the equipment must not be stored in the boiler room.
- It is vital that the boiler is switched off when filling the fuel bunker using a pump vehicle. (Markings are on the lid of the filling nozzles). Non-compliance may allow combustible and toxic gases to enter the storeroom.
- The fuel bunker must be safeguarded against entry by unauthorised persons.
- Always cut off the power supply if you have to enter the fuel bunker.
- Always use low voltage bulbs to light the storeroom (these must be approved for this purpose by the manufacturer).
- The equipment may only be operated using designated fuels.
- Prior to onward transportation of ashes, these must be cooled down for a minimum of 96 hours in the storeroom.
- In case of any questions please contact us by telephone +43 3357 / 42840-840.
- The first start-up must be carried out by HERZ factory customer service or an authorised specialist. (Otherwise the guarantee becomes invalid).
- Before entering the pellets storeroom aerate for 30 minutes!
- The boiler conforms the regulation of the Swiss VKF and respectively the particular state regulations regarding fire prevention. The costumer is fully responsible for the compliance with those regulations.

1.1 Warning notes

	Means that injuries or damage of property may occur in case of inappropriate handling of the installation.
	Warning – hot surface
	Warning – potential injury to hands
	No access for unauthorized persons

Compliance with other non-highlighted advice concerning transport, assembly, handling and maintenance or technical data (in user manuals, in product documentations and applied on the installation itself) is mandatory to avoid any problems that may lead directly or indirectly to severe injuries or damages of property.

General notice

This user manual contains due to clearness and due to the possible multitude not all detailed information and may not consider each possible case of operation or maintenance. In case of additional information requests or in case of specific problems that are not mentioned in the attached user manuals your specialist dealer or HERZ may provide further information.

People (including children) who are not in a position to use the equipment safely due to their physical, sensory or mental capacities or their inexperience or lack of knowledge should not use this equipment without supervision or instruction by a responsible person.

Fundamental security information

Due to its functional electrical and mechanical character the installation, in case of inappropriate handling, operation and maintenance or in case of illicit intervention, the installations may cause severe injuries and damages of property. Therefore it is mandatory that planning and assembly of all installation, transport, operation and maintenance is carried out through qualified responsible field service personnel.

Operating electrical systems must have the effect that certain electrical parts are live parts and therefore any contact could be dangerous. Only trained and qualified personnel may work at this installation. The personnel must have been familiar with this and all other manuals. Proper and safe use of the system needs appropriate transport, correct storage and appropriate operation and maintenance. Advice and details attached to the system have to be noted.

1.2 Installation

General security note

Safe operation and safe maintenance of the system request that they are carried out by qualified personnel, considering the warning advice of this user manual and the details attached on the systems.

Manufacturer documents for the devices and components being used the equipment are available from HERZ upon request.

1.3 Operation and maintenance

1.3.1 General safety notes

For safe operation and maintenance of the equipment, it is vital that actions are carried out appropriately by qualified staff, taking heed of the warning notes in this documentation and the notes on the equipment.

The equipment may only be opened when “HEATING OFF” is indicated as there is otherwise a risk of deflagration.

With unfavourable operating conditions temperatures of over 80°C may occur at parts of the casing.

When opening the ash storage door during operation the fuel supply is cut off and the boiler goes into burnout phase. This then changes into the “HEATING OFF” mode of operation.

1.3.2 Operation

General safety notes

Coverings that prevent the moving of hot or rotating parts or which are required for the correct supply of air and effective functioning must not be opened during operation.

Any faults or unusual operating conditions such as the emission of smoke or the appearance of flames mean that the equipment must be immediately switched off using EMERGENCY OFF. HERZ must then be notified of this straight away.

- Where the main switch on the heating room door is activated or if the power supply fails, the equipment immediately goes out of operation. The residual installation of fuel burns independently without toxic gases being given off, provided that the naturally occurring chimney draw is sufficiently high. The chimney must therefore be dimensioned and designed according to EN 13384 and DIN4705. It is obligatory to check the complete installation for serviceability and to ensure a safe operating at each restart.
- Where the minimum residual oxygen content of 5% in the flue gas is not reached, the fuel supply is stopped automatically and is only activated once again when the residual oxygen content is over 5%. (Display readout: MIN O2 [%] 5.0)
- The noise caused by the machinery during operation does not have any adverse effects upon the health of people.

1.3.3 Maintenance

General safety notes

Before commencing any work on the equipment, but particularly before opening coverings of parts under voltage, the equipment must be enabled according to the instructions. As well as the main electrical circuit, any additional or auxiliary circuits should be noted. The usual safety rules according to ÖNORM are:

- Switch off all poles on all sides
- Ensure that it is not switched on again
- Check that there is no voltage
- Earth and short-circuit
- Cover neighbouring voltage-carrying parts and limit danger spots

These above mentioned measures many only be cancelled if the equipment is completely installed and the commissioning completed.

For overhaul work in the combustion chamber, ash chamber, on flue gas-carrying parts, emptying of the ash store, etc., the use of personal dust protection masks and gloves is required!

For overhaul work in the storage room, low voltage bulbs must be used. The design of electrical equipment in the storeroom must conform to ÖNM7137.

In order to prevent any commissioning errors due to incorrect maintenance, it is recommended that regular maintenance servicing be carried out by authorised staff or the HERZ factory customer service.

Spare parts may only be obtained direct from the manufacturer or sales partner. No health risks will be caused to the customer from noise arising from the machinery. Details of any residual risks can be requested from the residual risk analysis from HERZ as required.

2 INSTALLATION

2.1 Starting up

The first start-up must be carried out by HERZ factory customer service or an authorised specialist.

Besides this the low pressure in the flue pipe connecting piece of the boiler has been measured after the combustion with the designated solid fuels at least one hour during the operation and an advance flow temperature of 70 - 85°C has been achieved.

It can thereby be determined whether feed pressure for the correct operation of the boiler (formerly described as draw requirement“) has set itself. If the existing chimney has not been measured correctly or if the calculated chimney values have not been met (inappropriate connection, entry of secondary air, connection piece too long, etc.) it will not be possible to operate the boiler correctly.

During start-up and handover to the operator, the functioning of all control and safety equipment must also be monitored and the operation and maintenance of the boiler and equipment must be explained to the operator in detail.

2.2 Important information for heating installers

The operator must confirm in writing that:

- He has been sufficiently instructed on the correct operation and maintenance of the equipment.
- He has received and familiarised himself with the operating instructions and any other documents, etc.
- He is therefore sufficiently familiar with the equipment.

Note: The boiler return flow sensor is to be operated as a submerged sensor.

An analogue temperature display is also installed ex-factory (also with submerged sensor). This should be tested weekly for correct functioning.

The hydraulic balancing of the equipment (pipe installation) must be carried out by a licensed (authorised) specialist company (installer).

The specialist company is obliged to:

- Install a correctly designed membraned expansion vessel
- Draft documentation for all the equipment (according to ÖNORM EN 12170), which must be kept in the boiler room.

All recognised regulations, instructions and standards are to be applied by the specialist heating company.

Heating water:

With regard to the quality of the heating water, take into account ÖNORM H 5195, for Germany – EN 12828 part 1, VDI 2034 (prevention of damage through corrosion and calcification in closed hot water heating systems with operating temperatures up to 100°C).

Requirements e.g.:

- Chloride maximum 30mg/l
- pH-value 8 – 8,5
- Oxygen maximum 0,1 mg/l

The heating equipment must be filled by the installer according to the valid instructions and technical guidelines and with sufficient frost protection.

When using frost protection the following parameters must be adhered to:

- At least 25% and maximum 50% proportion of ethylene or propylene-based frost protection agents, depending on the temperature level
- It is vital to take note of manufacturer details!
- Mix well before filling and do not mix any different frost protection agents (mark on the equipment!)
- Do not add any water to ready-mixed products!
- Check equipment once a year for proportion of frost protection, pH value 7.5 - 9.5, corrosion protection and visual water quality.

If the installation is NOT equipped with an anti-freezing agent, freezing is possible in cases of a lasting electrical power cut (e.g. 2 days). To avoid that HERZ recommends an emergency generator that provides enough power for the boiler, the filter system (if existing) and the room discharge system.

2.3 Safety installations

These must be dimensioned and installed according to the ÖN B8133.

The safety valve in the boiler circuit is used as a final safety instance against malfunction of the system.

Safety temperature limiter STL

If the boiler temperature exceeds 95°C the system must be shut down for safety. The STL will lock in this case.

Possible causes can be:

- The power decrease of the boiler was abruptly interrupted. This may occur by switching off a pump or by a sudden closing of the heating circuit mixer.
- The consumer pumps are controlled by the HERZ control. The so-called over temperature dissipation is automatically activated by the HERZ control. Thereby higher boiler temperatures are avoided.
- The boiler is dimensioned too large
- The fuel level is set too high
- Power failure
- etc.

First, the error cause must be found and fixed, only then the STL will be unlocked.

For unlocking the boiler temperature must be below about 75°C.

Only then the problem can be acknowledged. For this purpose, the cover of the STL is screwed off. The STL can be unlocked by a light pressure with a sharp object. After unscrewing the cover, the fault acknowledgement must be performed at the switch box. The STL is located below the operator terminal.

2.4 Operating temperatures and prohibited temperatures

2.4.1 Boiler temperature

The HERZ pelletstar boiler is operated between 65 and 90°C boiler temperature in operation. Below 55°C back-flow temperature, a part of the flue gas is condensed on the inside of the boiler. To avoid condensation the operating temperature (of 65 to 90°C) must achieve this temperature as soon as possible at the boiler start. The back-flow temperature can also be below this value by correct boiler operating temperature. This condition must be avoided by a functioning back-flow bypass 60°C.

Caution!

For corrosion damage caused by incorrect operating temperatures all guarantee and warranty decayed.

2.4.2 Back-flow temperature

The back-flow temperature is always lower than the boiler temperature. The back-flow temperature must rise after the start as soon as possible on or above 60 °C. The hold up of the back-flow temperature and boiler temperature is realized by the back-flow bypass. At this the flow water is admixed with a pump and an appropriate valve to the back-flow. The heat energy of the boiler can be utilized only from that moment at which the back-flow temperature has exceeded 60°C.

3 FUELS

Wood pellets for non-industrial use after ENplus, Swisspellet, DINplus or ÖNORM M 7135 resp. pellets after EN14961-2 according to following specifications:

- Property class A1
- The maximum permissible fines content in the fuel store must not exceed 8% of the fuel volume stored (determined using a perforated screen with holes 5 mm in diameter)!
- Fines content at the time of loading: <1,0 m-%
- Calorific value in as-delivered condition > 4,6 kWh/kg
- Bulk density BD in as-delivered condition > 600 kg/m³
- Mechanical Strength DU, EN 15210-1 in as-delivered condition, m-%: DU97,5 ≥ 97,5
- Diameter 6mm

The nominal power and the emission values can be guaranteed up to a maximum water content of 25 % and a minimum calorific value of 3,5 kWh/kg of the permissible fuel.

From a water content of about 25% and a calorific value < 3,5kWh/kg a reduced output is expected.

Foreign bodies such as stones or metal particles should be prevented from entering the system! Sand and soil lead to more ash and slagging.

According to the fuel there may be a formation of slag, which may need to be removed by hand.

In the case of non-compliance, any warranty or guarantee will be rendered null and void. The burning of unsuitable fuels could lead to uncontrolled combustion. Operational faults and consequential damage are likely to occur.

Is a different fuel on the order named and explicit on the order confirmation noted, the system can also be operated with this fuel.

Note: The system is set to the agreed fuel at the commissioning. This setting (fan speed settings, fuel settings, flow/backflow fan, cycle time, and so on) should not be changed by constant fuel quality.

4 TECHNICAL INFORMATION

Technical Data	10	20	30	45	60
Nominal heat capacity [kW]	4,8 – 16,0	6,2 – 21,0	6,2 – 30,0	10,1 – 45,0	10,1 – 60,0
Permissible flow temperature [°C]	95	95	95	95	95
Permissible operational excess pressure [bar]	3	3	3	3	3
Weight of boiler [kg]	261	310	310	518	518
Water content [ltr]	55	78	78	178	178
Volume of suction hopper [ltr / kg]	86 / 56	86 / 56	86 / 56	109 / 71	109 / 71
Volume of hopper [ltr / kg] (Filling by hand)	165 / 107	165 / 107	165 / 107	195 / 137	195 / 137
Delivery pressure [mbar]	min: 0,05				
	max: 0,10				
Exhaust gas data:					
Exhaust gas temperature at nominal load [°C]	130	120	150	110	130
Exhaust gas temperature at part load [°C]	80	80	80	80	80
Mass flow flue gas at nominal load [g/s]	7,9	14,0	19,0	29,0	36,0
CO2 – content at nominal load [Vol. -%]	13,6	11,7	12,0	12,3	13,4
Electrical connection:					
Electr. connection [V, Hz, A] / Delivery rate [kW]	230, 50, 16 / 2,0				

Electrical power consumption	10	20	30	45	60
Standby [W]	17,5			16,1	
Filling (Suction turbine) [W]	1544			1522	
Plug-in [W]	29			106	
BBD [W]	7			7	
Flexible discharge [W]	103			95	
Heat exchanger cleaning [W]	57			69	
Grate cleaning [W]	50			73	
ID fan [W]	61			88	
Ignition process [W]	563			782	
At 100% capacity / lowest capacity [W]	94 / 51			160 / 72	226 / 72

4.1 Choice of nominal heat capacity

When choosing the boiler size, it should be noted that under heating equipment legislation, the nominal heat capacity according to the heat requirement stated in DIN 4701 and ONORM M 7500 (Swisspellet and DIN plus for Switzerland) should not be exceeded.

4.2 Hydraulic connection

Boilers for solid fuels are not integrated into open equipment according to DIN 4751-1, but according to the installation examples into closed equipment, DIN 4751-2.

Only regulated heating circuits with a mixer should be connected.

4.3 Back-flow bypass

Reverse flow elevation is required. It must be ensured that the reverse flow temperature does not fall below 60°C.

Attention:

In case of corrosion damage due to low reverse temperature, guarantee and warranty claims become invalid.

4.4 Thermal flow guarantee

No thermal process protection is required for types PS 10, 20 or 30. For pelletstar types 45-60 a safety heat exchanger must be installed in the boiler, to which thermal process protection must be connected.

4.5 Draught limiter and explosion flap

The installation of a draught limiter is required and the draught requirement is between 5 and 10Pa.

According to TRVB H 118 an explosion flap must be installed in the chimney (HERZ recommendation).

4.6 Flue gas system

Connect the flue tube below an angle of 45°, steadily rising and thermally insulated to the chimney. It is recommended to mount the draw controller with explosion flap into the chimney (between flue pipe and cleaning door). If the draw controller was installed into the flue pipe, it would result in unwanted dust. Every flue pipe bow increases the flow resistance and can cause flow noises which are rectified by the chimney. This can lead to noise pollution. For this reason flue pipe bows should be avoided.

Boiler and chimney must fit together. EN 13384 can be used to help with calculation.

When using frost protection the following parameters must be adhered to:

- At least 25% and maximum 50% proportion of ethylene or propylene-based frost protection depending on the temperature level
- It is vital to take note of manufacturer details
- Mix well before filling and do not mix any different frost protection agents (mark on the equipment)
- Do not add any water to ready-mixed products
- Check equipment once a year for proportion of frost protection, pH value 7.5-9.5, corrosion protection and visual water quality.

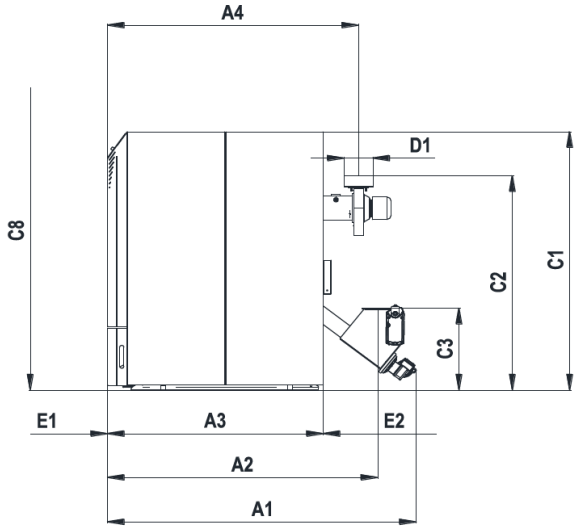
Combustion air feed

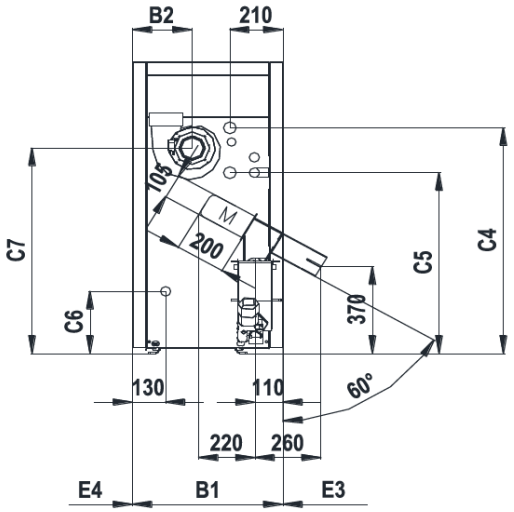
The combustion air feed should not contain impurities such as:

- Halogen hydrocarbons (sprays, colours, solvents and cleaning fluid)
- Large attacks of dust
- High humidity content. There should be adequate ventilation (approximately 150 x 150mm).
- (For Switzerland according to VKF kWx10.3 cm^2 with a minimum of 150 cm^2). Otherwise applies: 5 cm^2 per kW boiler output, nevertheless at least 400 cm^2. Country-regulations must be kept.

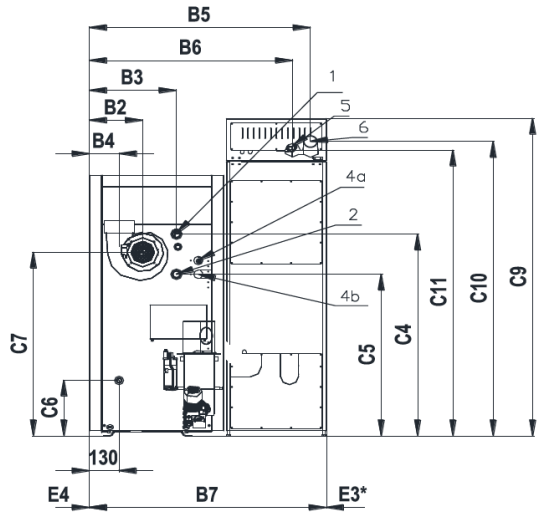
5 DIMENSIONS

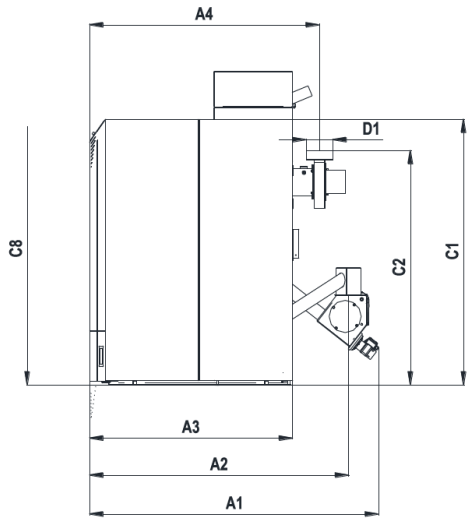
pelletstar – for flexible screw discharge





pelletstar – for suction discharge with interim container





Connections Boiler		10	20	30	45	60
1	Flow (Internal screw thread) [inch]	1	1	1	6/4	6/4
2	Return flow (Internal screw thread) [inch]	1	1	1	6/4	6/4
3	Filling/depletion [inch]	½	½	½	½	½
4a	Safety heat exchanger input (Internal screw thread) [inch]	–	–	–	½	½
4b	Safety heat exchanger output (Internal screw thread) [inch]	–	–	–	½	½
5	Suction turbine return pipe	Ø a 45	Ø a 45	Ø a 45	Ø a 45	Ø a 45
6	Suctiontube-connection	Ø a 60	Ø a 60	Ø a 60	Ø a 60	Ø a 60

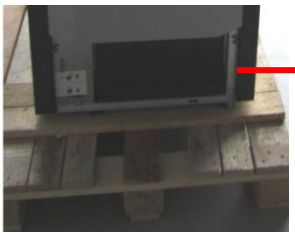
5 Dimensions

Dimensions		10	20	30	45	60
A1	Length overall	1400	1400	1400	1620	1620
A2	Length boiler plus distance to BSDD centre line	1235	1235	1235	1455	1455
A3	Length Boiler	900	980	980	1140	1140
A4	Length boiler plus distance to flue pipe centre line	1065	1140	1140	1290	1290
B1	Width	590	590	590	750	750
C1	Height	1130	1230	1230	1480	1480
C2	Height to flue pipe top edge	925	1025	1025	1305	1305
C3	Height to BSD top edge	390	390	390	505	505
C8	Minimum ceiling height	1500	1600	1600	2100	2100
D1	Diameter flue pipe	130	130	130	150	150
E1	Minimal gap front	750	750	750	750	750
E2	Minimal gap rear	500	500	500	600	600
E3	Minimal gap left (without hopper)	750	750	750	750	750
E3*	Minimal gap left (with hopper)	500	500	500	500	500
E4	Minimal gap right	150	150	150	150	150
Inserting dimensions [mm]		**10**	**20**	**30**	**45**	**60**
	Length	865	940	940	1140	1140
	Width	590	590	590	750	750
	Height	1130	1230	1230	1480	1480
Inserting dimensions by hopper execution [mm]		**10**	**20**	**30**	**45**	**60**
	Length	940	940	940	1140	1140
	Width	650	650	650	890	890
	Height	1395	1395	1395	1915	1915

6 INSTALLATION AND DEINSTALLATION

Boiler as delivered

The boiler is screwed on the pallet, the ash door is located on the boiler, the ash door must be attached.



Door removed

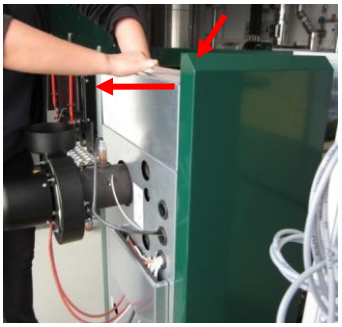
Hook in the fuse all the way to the stop

Then use an Allen key and install the upper door screw (preinstalled at the ash door).

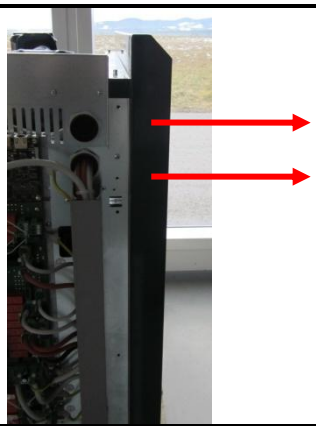
Installation of the door stopper

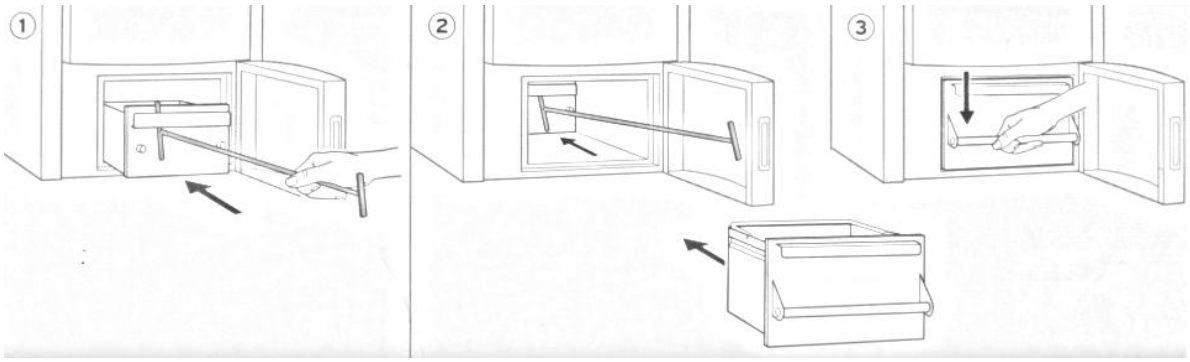
Place the door stopper in the slot on the pellet boiler. Screw the free end of the door stopper on the ash pan door so that the door stopper is movable.

After this, the lower door screw can be installed.

Deinstallation of the upper covering casing	
Disengage the screw	The screw has been loosened, the covering casing can now be removed by pressing backwards.
Remove the left front covering casing:	
The covering casing has to be removed by pulling movement (arrow) on the casing. The top cover must already be dismantled!	Cover is removed by pulling movement → Cover isn't fixed with screws
Remove the left back door panel:	
	
To dismantle the door panel, the front wall of the boiler must be dismantled before. For this the screws (see the lower picture) must be loosened.	Upper back wall casing is detached, now the screws of the covering can be loosened. / Covering can be detached.

Open the front wall		
The front wall casing is a door. The casing is mounted on the right and swings to the right.		

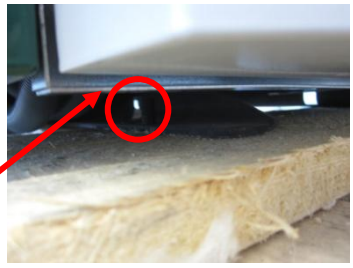
Remove the right door panel	
To dismantle these, the front wall of the boiler must be dismantled before. For this the screws which are marked in the picture below must be loosened.	
	
Loosen the screw which is marked in the picture.	Side panels can be removed.

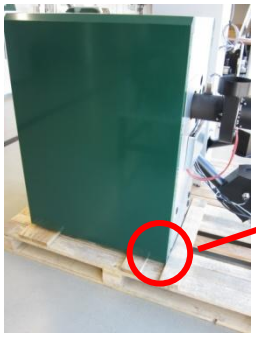
Ash ark		
		
Step 1: Open the ash door; then push the first ash ark with the delivered ash hook in the opening	**Step 2:** The second ash ark can be pushed in by hand.	**Step 3:** Fix the second ash ark with the mounted lever.

6.1 Boiler insertion

6.1.1 With the help of a crane eye resp. transport lug

6.1.2 With hand pallet truck





Palett:

By insertion of the boiler with a hand pallet truck it is necessary that by lowering of the boiler the two fixing screws (front left and right back on the boiler) must be removed from the pallet.

6.2 Positioning

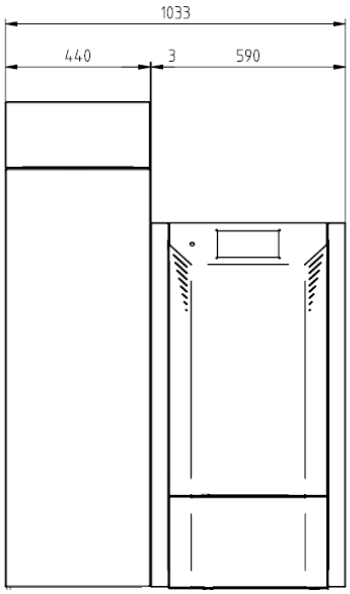
6.2.1 Boiler without container

Positioning of the boiler according to the plan! Sound insulation is recommended.

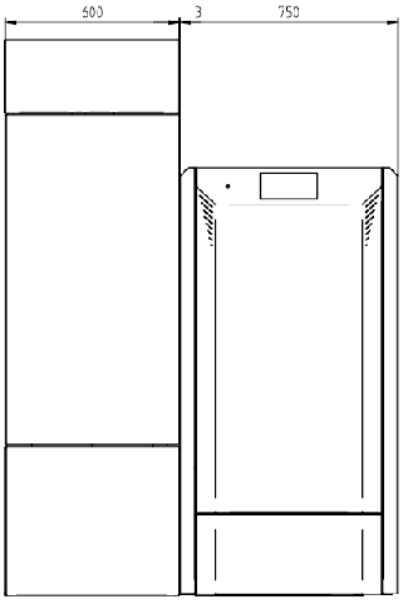
- Front: floor space front at least 750mm
- Back: Positioning from behind according to the plan resp. at least 750mm related to the back wall covering
- Left: floor space left at least 750mm
- Right: Positioning of the right side according to the plan resp. at least 150mm related to the covering

Attention: flexible pipe length must be at least 1000mm

6.2.2 Boiler with container



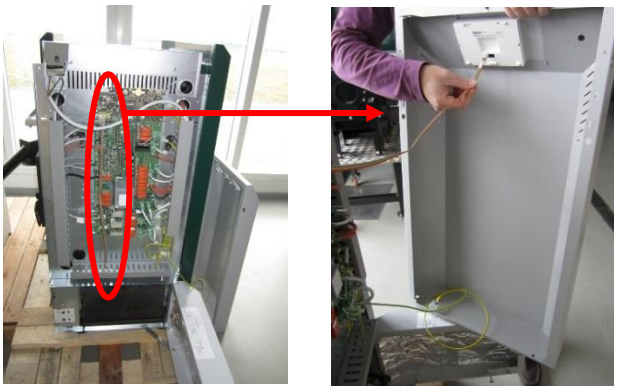
pelletstar 10-30:
The distance between container and boiler is 3mm.



pelletstar 45-60:
The distance between container and boiler is 3mm.

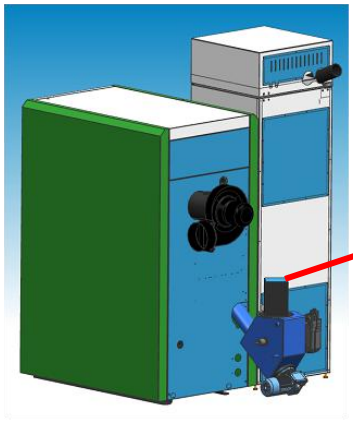
6.3 Wiring

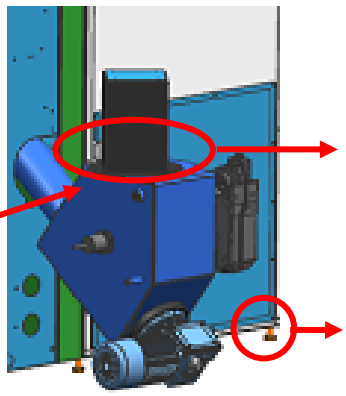
The above circled openings are cable channels in which the cables for heating circuit connections and additional boards can be retracted.



This cable is connected by the control.

6.4 Installation container handover snail

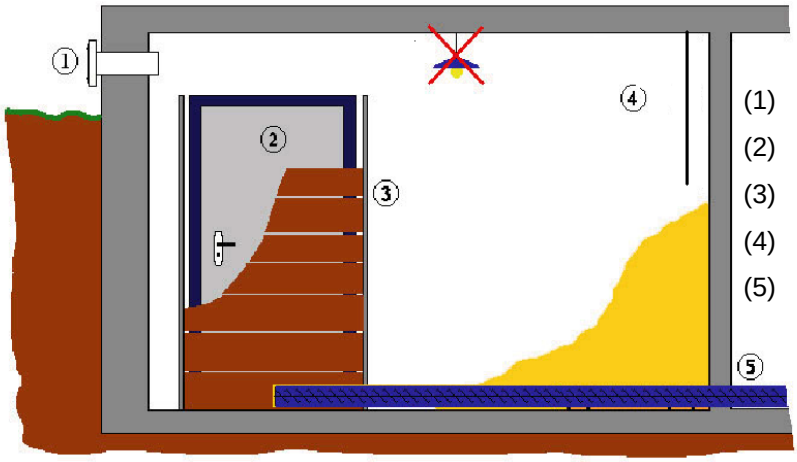




The screw-conveyor is connected with the delivered terminals on the container handover snail!

The height can be adjusted and the container can be justified with the foot screws.

7 CORRECT STORAGE AREA



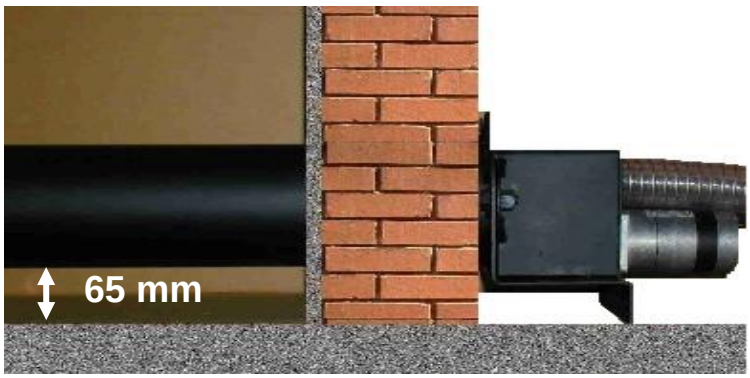
(1) Injection neck
(2) Fire protection door
(3) Wooden post
(4) Baffle
(5) Feeder screw or suction probe

The most important points are:

- The storage room should have an outer wall, be small and square, with the blow-in supports on the face. It should contain the annual requirements.
- The walls must be solidly bricked and thick (brick walls plastered both sides). Fire protection category F90 (Switzerland EI 60), fire protection doors or hatches to T30 (Switzerland EI 30). The outward opening door should be supported by wooden posts.
- A rubber mat (or baffle) should be placed opposite the blow-in supports to protect the wall.
- The storage room must be dry. In case of any doubts, ask your pellet supplier or contact your heating manufacturer.
- Openings of any kind are to be avoided, pipes to be closed off, and old electrical installations clamped off and filled in. The room must be (dust) –tight. Tip: before blowing in, close off the key hole with sticky tape.
- Electrical installations (lights) are prohibited except those that are protected.
- Both supports are to be bricked in with a 1m gap (do not insulate). Should the gap be smaller then use a support 50cm longer.
- Storage must conform to ÖNORM 7137.
- Transportation and storage logistics must conform to ÖNORM M 7136.

8 INSTALLATION OF THE REMOVAL SYSTEM

8.1 Suction probe



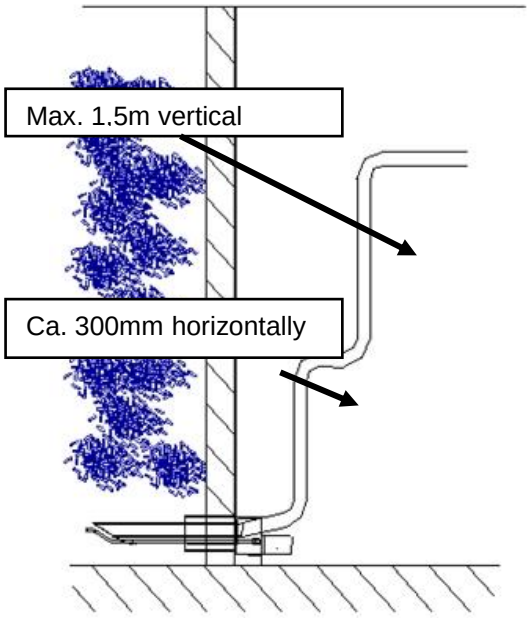
Attention:

Assembly of the probe holder has to be carried out so that the pipe is at least 65mm above the floor of the pellet storeroom.

Important:

When connecting the pellet feed hose to the probe you must bend the earth wire outwards in order to achieve the earthing of the feed hose with the probe.

8.2 Layering and assembly of the pellet feed hose



When laying the pellet feed hose, take care that the maximum feed height of 1,5 metres is not exceeded.

After vertical hose feeding, laying must always be carried out horizontally around 300mm.

You can the overcome several metres difference in height.

The pellet feed hose is fixed to the wall or floor with hose clips about every 50cm.

- The maximum length of the suction hose is: 20 metres
- The maximum negotiable height difference is: 5 metres
- The installation radius must not be lower than 0,3 metres.

8.3 Vacuum discharge system (modular)

Place the screw according to layout/submission plan from HERZ

- Mark the holes to drilled on the floor
- Remove the screw again
- Drill the holes (for dowels) using a drill.
- Place the dowels supplied in the drill holes
- Replace the screw
- Use and tighten the adjusting screws supplied

<table>
<tr><th>Installing the noise insulation</th><th colspan="2">Screwing together the discharge screw</th></tr>
<tr><td> </td><td> </td><td> </td></tr>
<tr><td>Install the noise insulation on the support struts.</td><td colspan="2">First the two parts of the discharge screw are put together. Then these are screwed together by using an M6 countersunk-head screw, until all extension pieces are screwed together.</td></tr>
<tr><th colspan="3">Putting together the discharge screw and the end support strut</th></tr>
<tr><td> </td><td> </td><td> </td></tr>
<tr><td colspan="3">After the discharge screw is assembled a sleeve is put on the end of the screw. This is screwed on using an M6 countersunk-head screw. When the sleeve is mounted on the screw this is simply mounted on the end support strut so that the discharge screw stands out approximately 5-10mm from the bearing.</td></tr>
</table>

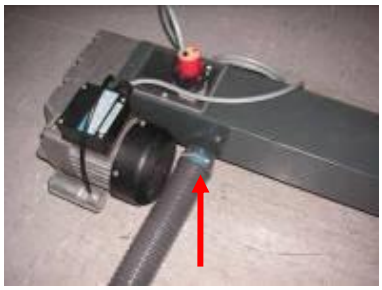
Protecting the discharge screw from twisting	Applying decompression to the discharge screw and interim support struts	
By using both Allen screws the discharge screw is saved against twisting. A greasing nipple is provided for greasing the bearing. The bearing should be greased every 2-4 weeks by using the greasing nipple.	Now apply the decompression near to the end support strut of the discharge screw. Then give the interim support struts over the decompression and raise the decompression so that the holes of the decompression and the holes of the interim- and end support struts are over each other.	
Screwing together the decompressor and the end support strut	**Screwing together the decompressor and the interim support strut**	
After raising, the decompressor is screwed together with the end support strut. Use an M8x25 Allen key. Before screwing on the M8 nuts place in the insert.	After this the second decompressor (extension module) is lifted on to the interim support strut, so that both decompressors can be screwed together with the interim support strut, provided that all decompressors are screwed together. Then use the M8x25 Allen key, M8 inserts and M8 nuts for this.	
Screwing together the decompressor and the piece that fits into the wall		
After screwing together the decompressors, the last decompressor is simply screwed on to the piece that goes through the wall. Use the M8x25 Allen screws, M8 inserts and M8 nuts for this.		

Assembling the motor and the discharge screw

The motor is put together with the stub of the feather key of the discharge screws, so that the feather key goes into the nut. Afterwards the screw and the motor are screwed together using 4 M10x70 Allen screws.

The motor should only be installed on the discharge screw as is shown in the image above.

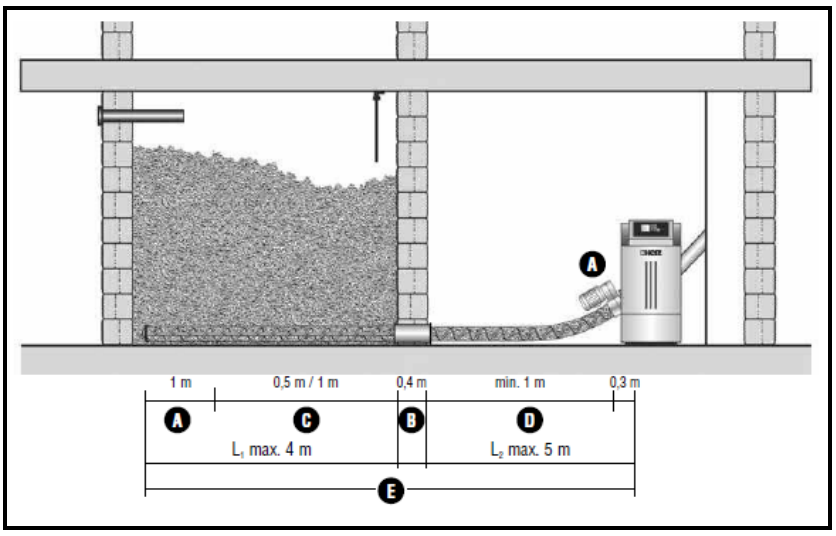
The discharge screw is safeguarded against slippage by using a pulley and a M8 Allen screw.

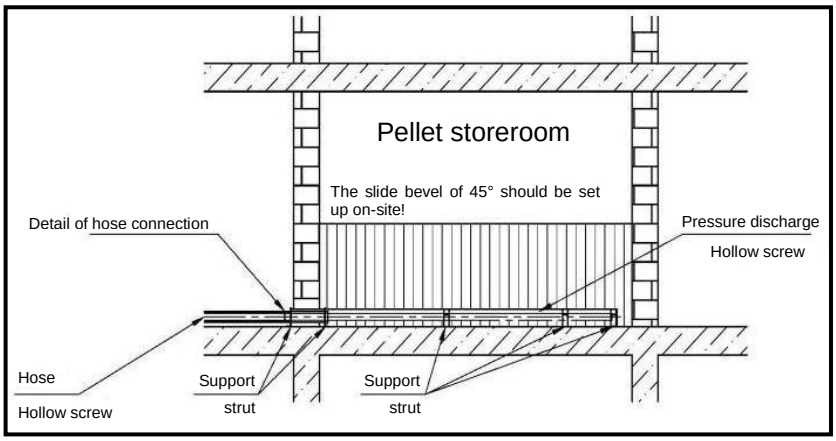
Attachment of the capacity sensor	**Clamping of the return air hose to the discharge screw:**	**Clamping the transportation hose to the discharge screw**
		
When the installation of the motor is completed the capacity sensor is simply placed in the sleeve provided.	First determine the required hose length between the boiler and discharge. Then clamp the hose onto the right support, seen from the front.	First place the required hose length between the boiler and discharge. Then clamp the hose onto the left support, seen from the front.

8.4 Flexible screw discharge – item number A031000-000

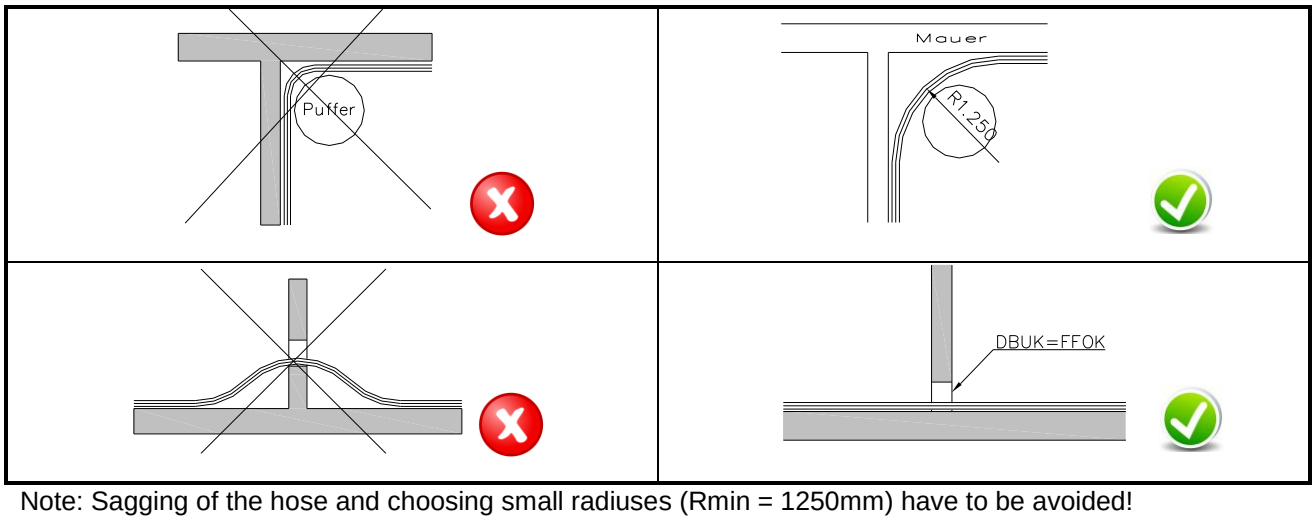
Functioning of the flexible screw discharge – The flexible screw discharge works as follows:

In the storage room there is a fixed decompression in lengths of 2 to 4m open areas to remove pellets. Among them is the flexible screw which is to be fitted in the area of the open part using a conveyor. Outside the storage room the screw is led into a wear-resistant hose (up to a maximum of 5m) up to the release head which is placed on the burn-back protection equipment, where the discharge motor is located.



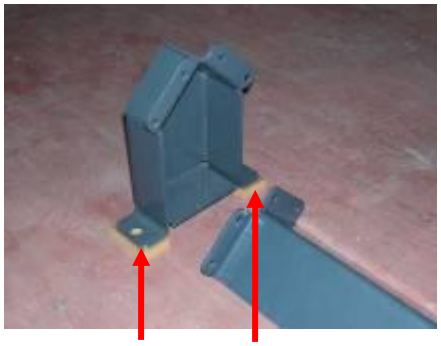
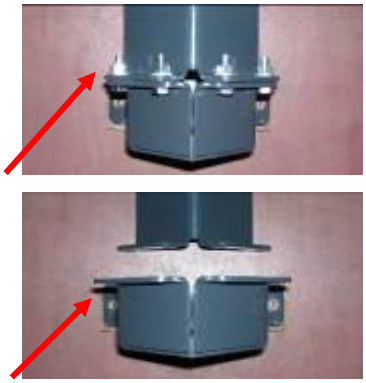
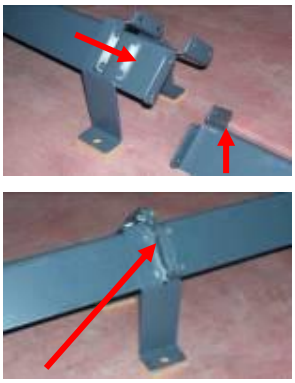
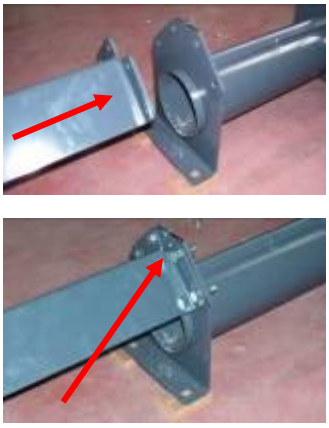


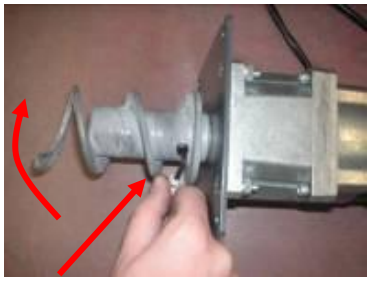
8.4.1 Advice for the laying of the pellet feed hose

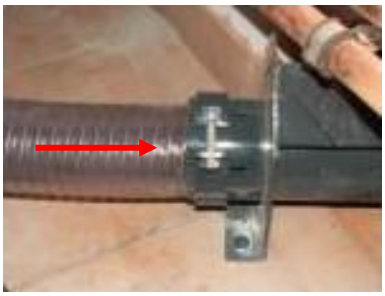


Note: Sagging of the hose and choosing small radiuses (Rmin = 1250mm) have to be avoided!

8.4.2 Installation

		
Install the noise insulation on the support struts.	Screw on the end piece with the decompressor by using the four M8 screws, inserts and nuts provided.	Flange the decompressor and the support strut by using the four M8 screws, inserts and nuts provided.
		
Flange the decompressor and the piece that goes through the wall by using the four M8 screws, inserts and nuts provided.	Connect the dosing bolt and screw it in by using the M6 countersunk-head screw.	Place the decompressor on the head and place the screwed dosing bolt in it, so that the end piece is lying on the end piece of the decompressor.
Positioning the decompressor and the dosing bolt according to the layout plan. Before this check the noise insulation on the support struts.	Place the piece that goes through the wall (pipe) between the first two flanges of the opening.	Connect the end stump of the dosing bolt with the covering and screw it with the countersunk head M6 screw.

Soundproof the decompression in the area of the gap. (example: rock wool at least 250mm compressed with melting point > 1000°C)	The decompression must be pushed no further than the first flange (strut) in to the wall of the storage room.	Drill a hole in the floor where Diam.=12 and D=70 for the strut.
Nylon 12x60 dowel and hexagonal Put in the 10x70 set screw.	Fix the set screw	Re-adjust the decompression and fix it at the end – after that the rest of the struts are fixed.
		
Take the release head and motor from the BBD by loosening the fixing clips.	Take the discharge motor with motor flange from the release head by opening the 4 piece M8x16 hexagonal screws.	Check that the M8x10 grub screw of the screw coil intake is tightened.

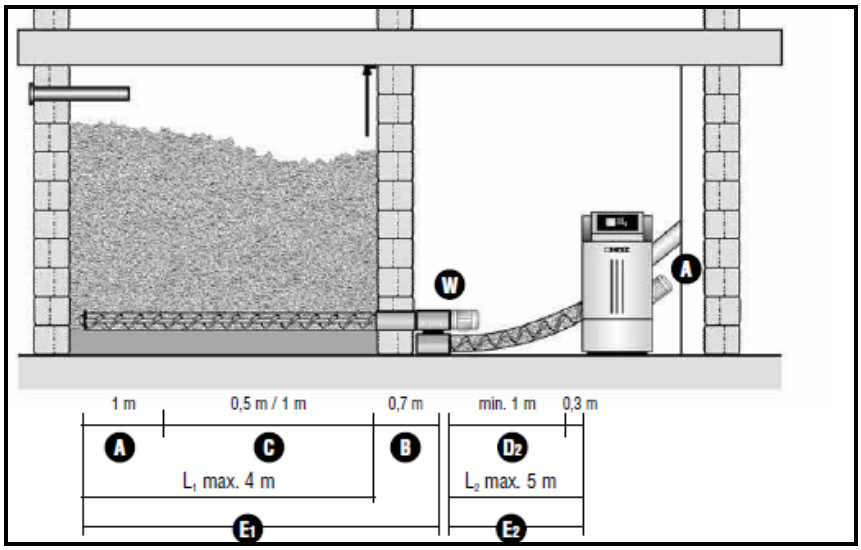
Arrange the release head centred on the BBD and clamp again – the connection pipe should face the decompression direction (see installation plan).	Measure the hose length (L) between the connection pipes from the release head and decompression. Attention: Note the bend radius for laying the hose.	At the release head add 150mm hose length for assembly.
At the decompression add 150mm hose length for assembly.	Sever the metal-spiral reinforced hose using a hacksaw or angle grinder. L_{tot}=L+150+200 !	At the place where it is cut, trim with a knife or file.
		
Push the 200mm plastic pipe (until the point where it resists) into the connection pipe of the decompression. Tip: Greasing the hose makes this much easier.	Fasten the hose clip tightly to the end of the pipe.	Push the 150mm release head over the hose (until it meets resistance).

Arrange the release head centred on the BBD and clamp once again.	Fasten the hose clip tightly to the end of the pipe (so that the hose and the pipe are pressed together).	Arrange the flexible hose horizontally with the same bend radius (Rmin=1250mm).
Arrange the hose vertically with the same bend radius (Rmin=1250mm).	Fasten the release head with the four screws, pulley and the flange clips.	Push the flexible screw spiral into the release head.
Push the screw spiral through the plastic hose.	Push the screw spiral over the conveyor.	Turn the screw spiral on the soldered screw spiral until it meets resistance. Push the screw with the conveyor to the end of the decompression.

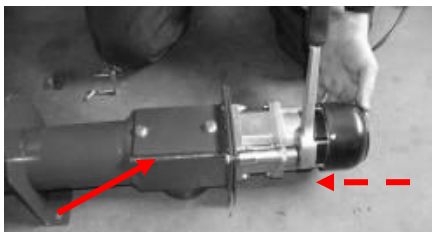
Sever the spiral screw lengthways (flush with the motor flange) using an hacksaw or angle-grinder.	Push the screw clamp inwards on the spiral at the release head with the screw.	Turn the discharge motor with the Screw on, take on the coil until it meets resistance. Push the clamp over both coils.
Tighten the clamp (protection against loosening).	Fix the motor with motor flange using the 4 nuts and screws. Tighten the screws!!	Recondition the plug connections for the discharge and BBD.

Attention: The maximum length of the feeder hose must not exceed 5 metres.

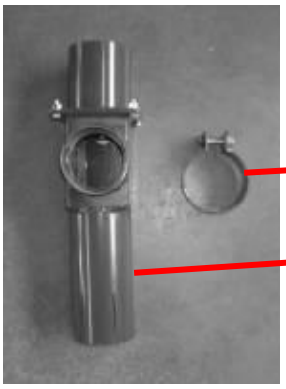
8.5 Flexible screw discharge – Item number A031000-080

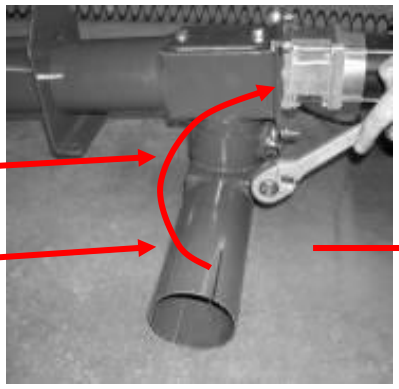


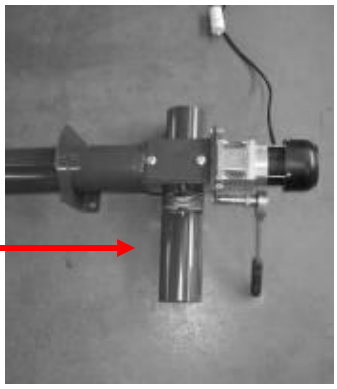
Installation of the flexible screw discharge:



Revision cover

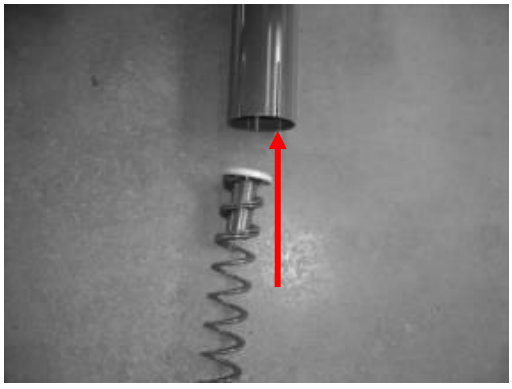




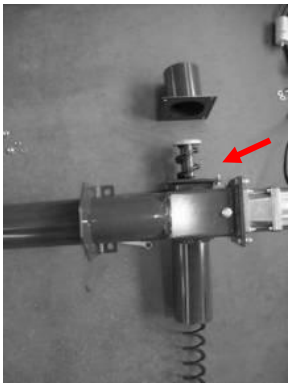


Re-fix the discharge motor on the wall passage piece with the transfer system using the four screws. Secure the lower transfer system using the clip.

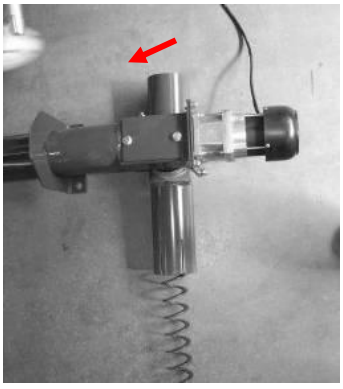
Screw the screw flight into the bolt with the welded on screw.



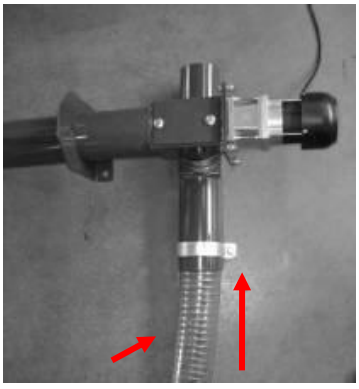
Push the screw flight into the lower transfer system



Unscrew the covering to check whether the screw is pushed right up to the stopping point.

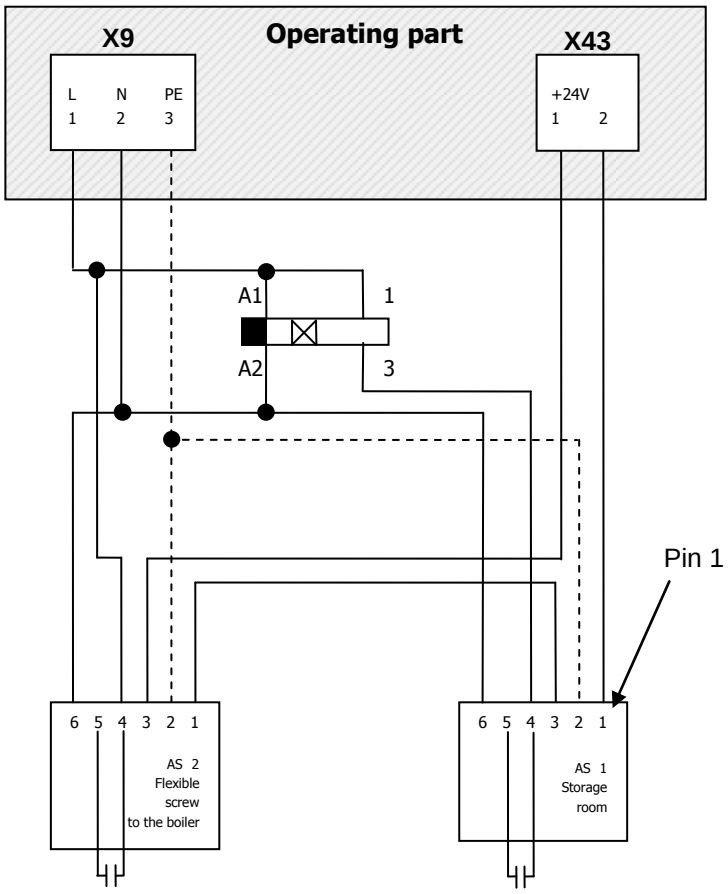


Replace the covering



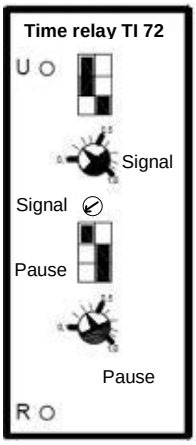
See flexible screw discharge – Item number A031000-000

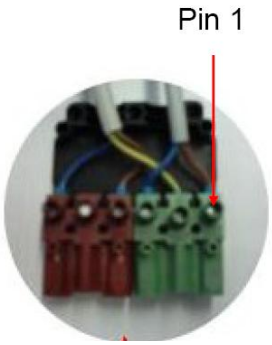
8.6 Connection diagram transfer system



Settings of the time relay:
Configuration:

Cycle: 15 sec
Pause: 3 sec
Beginning with pause



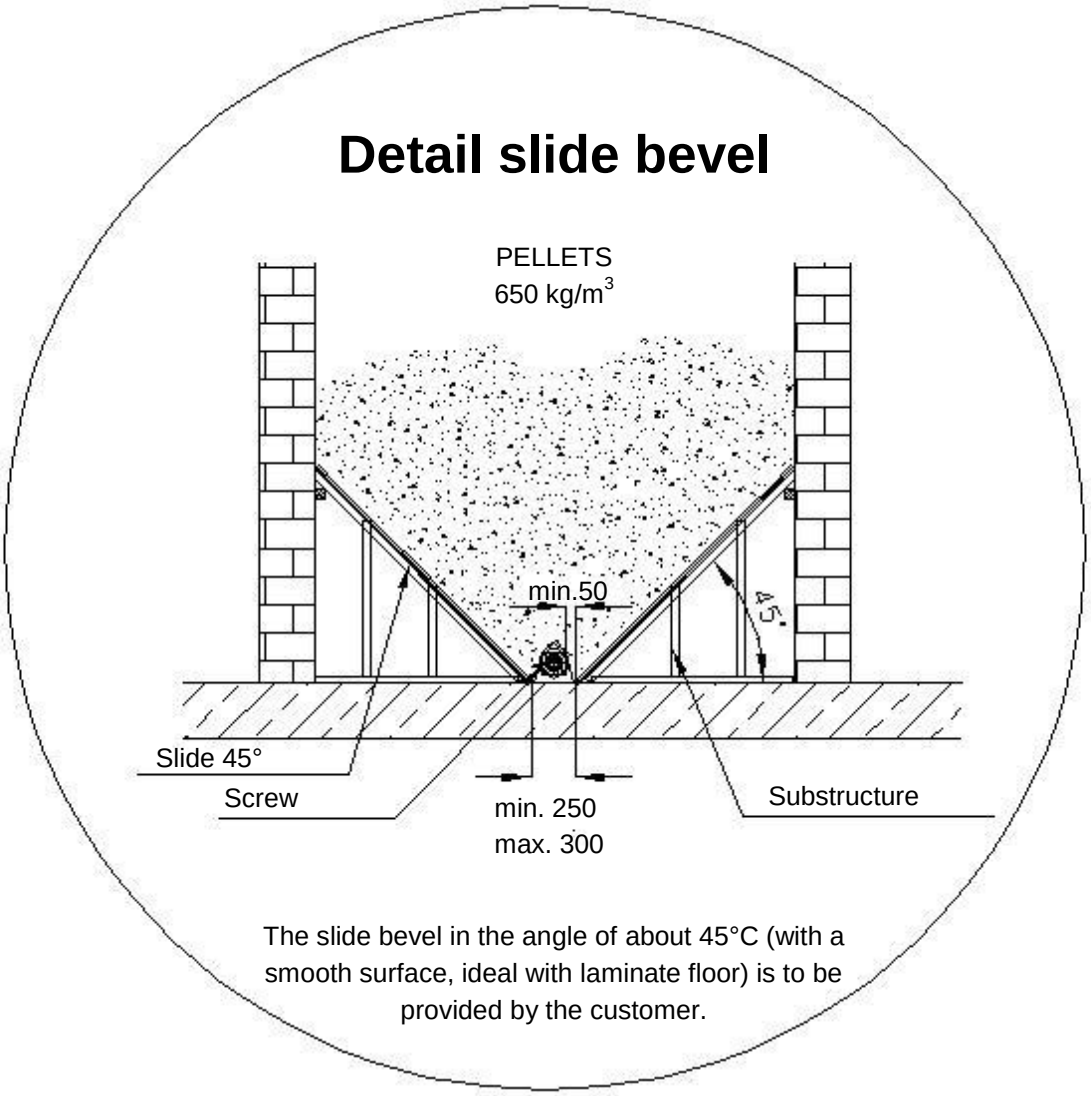


- Capacitor connect on motor
- Don´t connect capacitor parallel

Position of the relay for the transfer system:

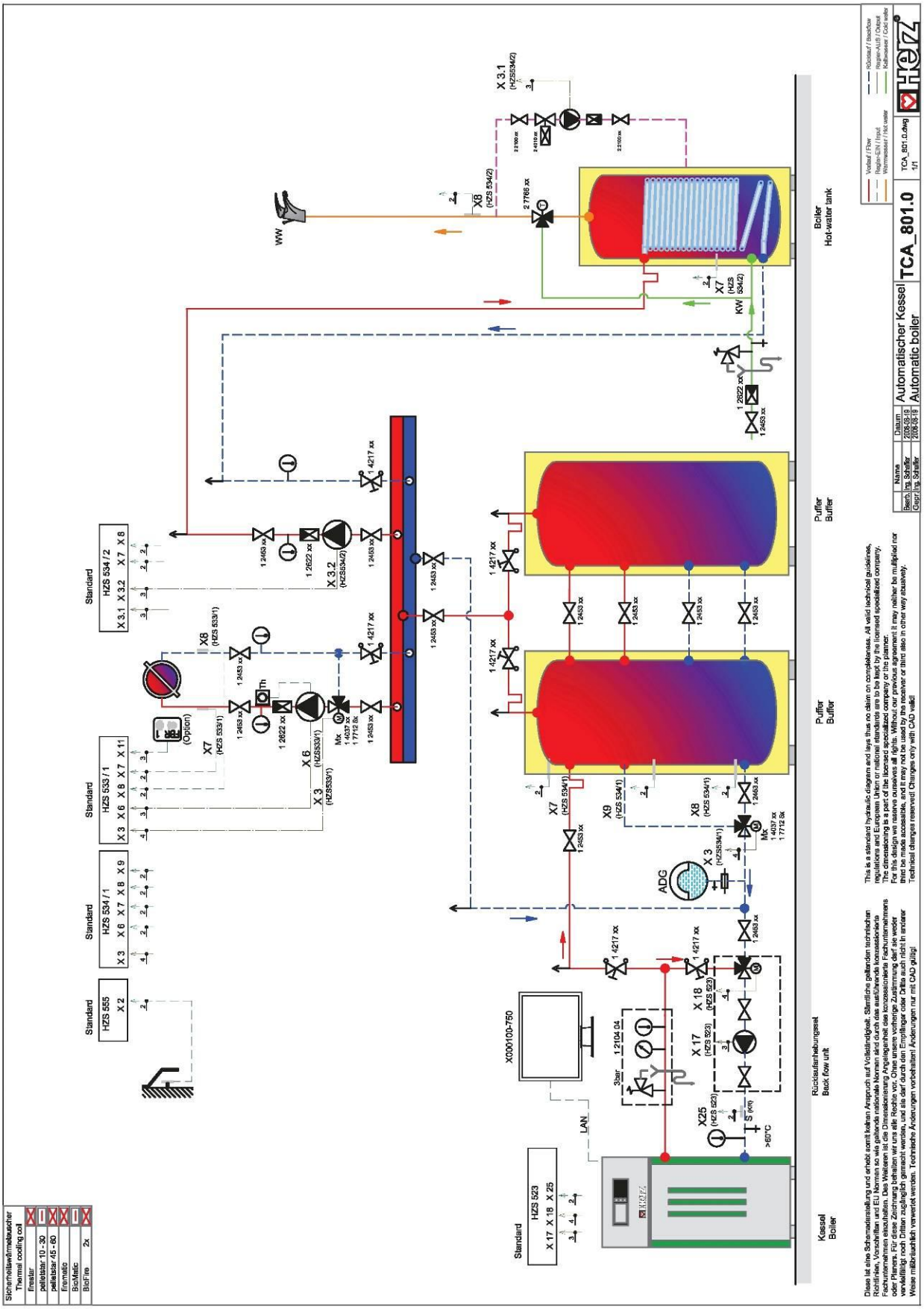
Relay

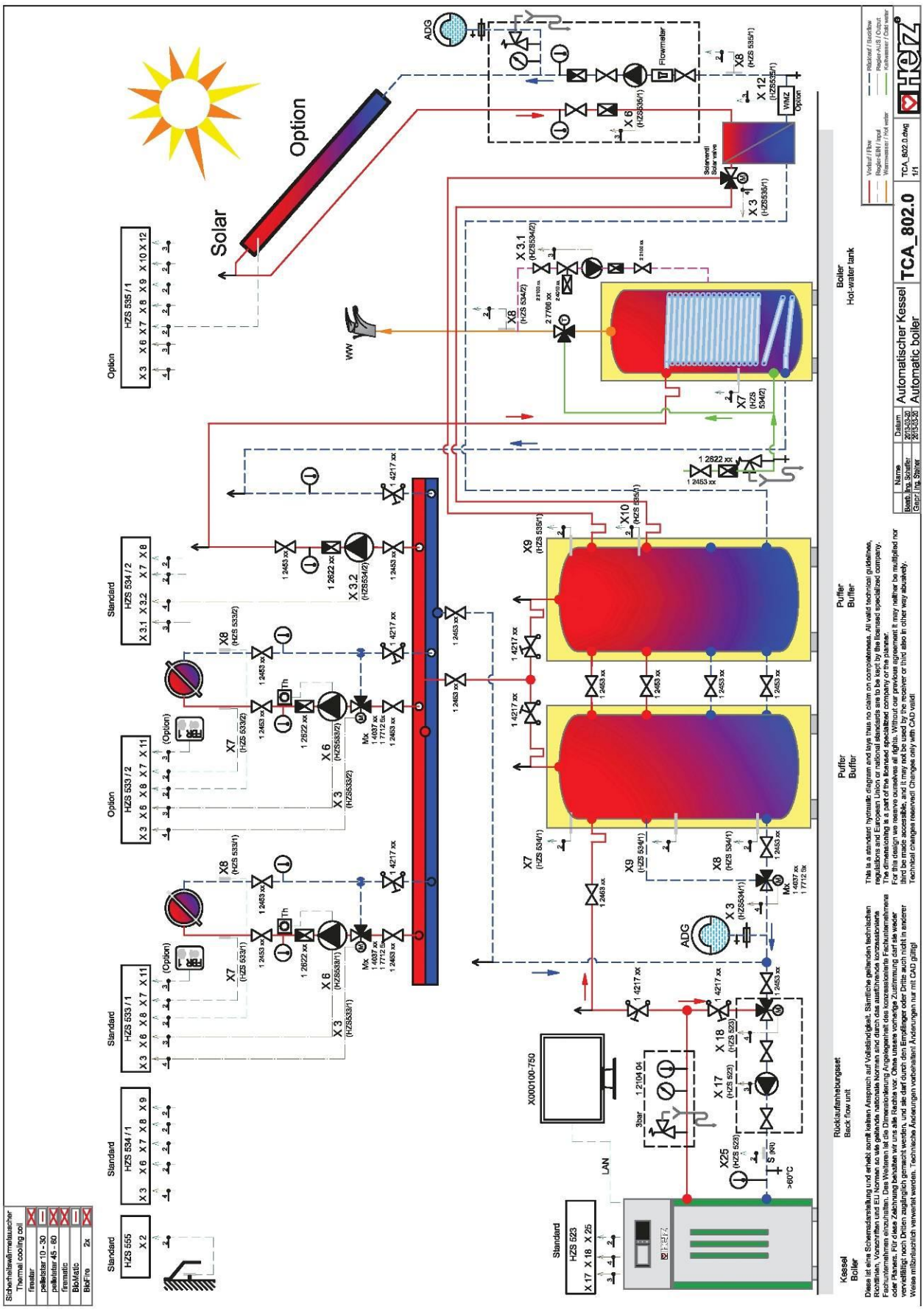
8.7 Slide bevel

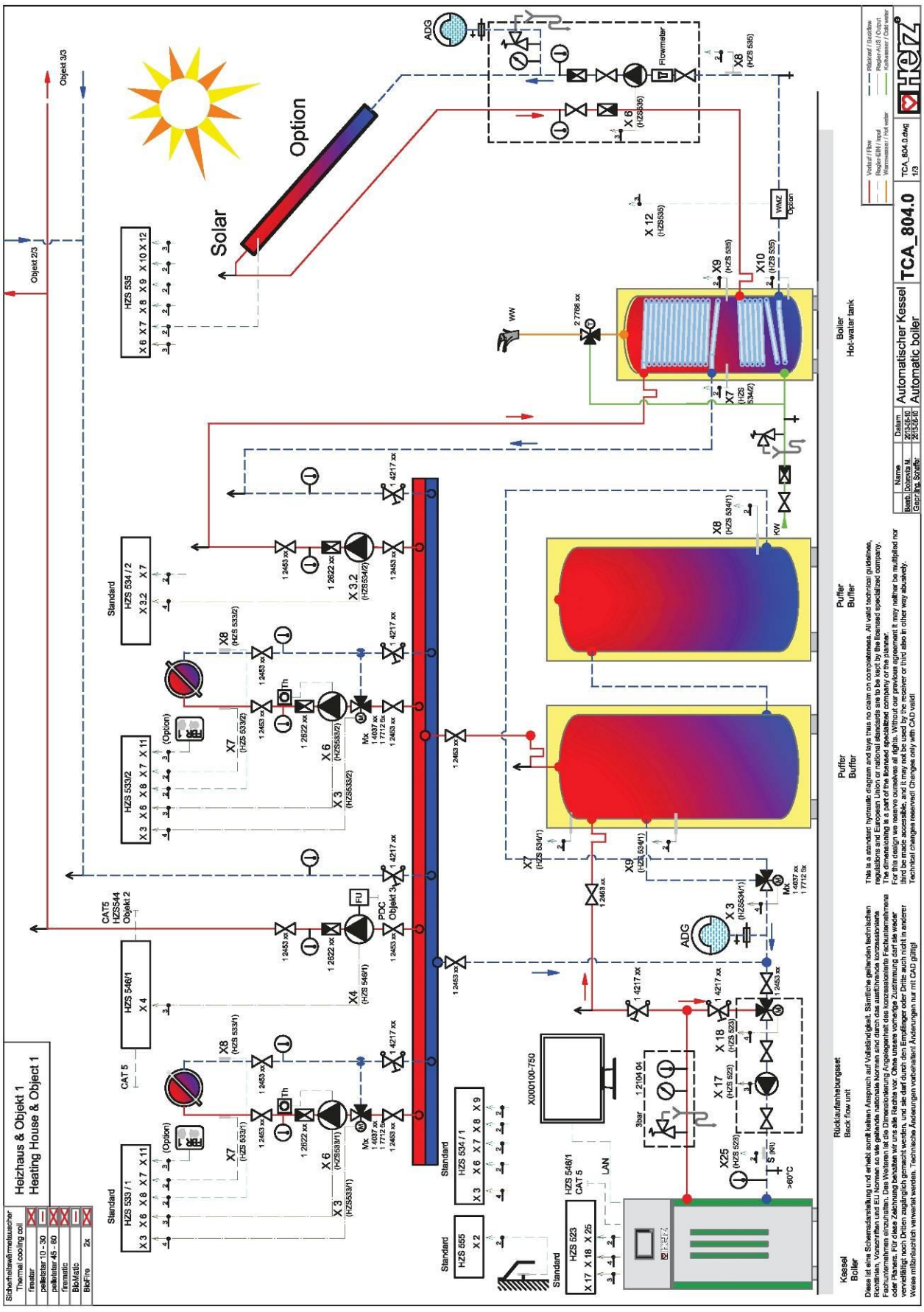


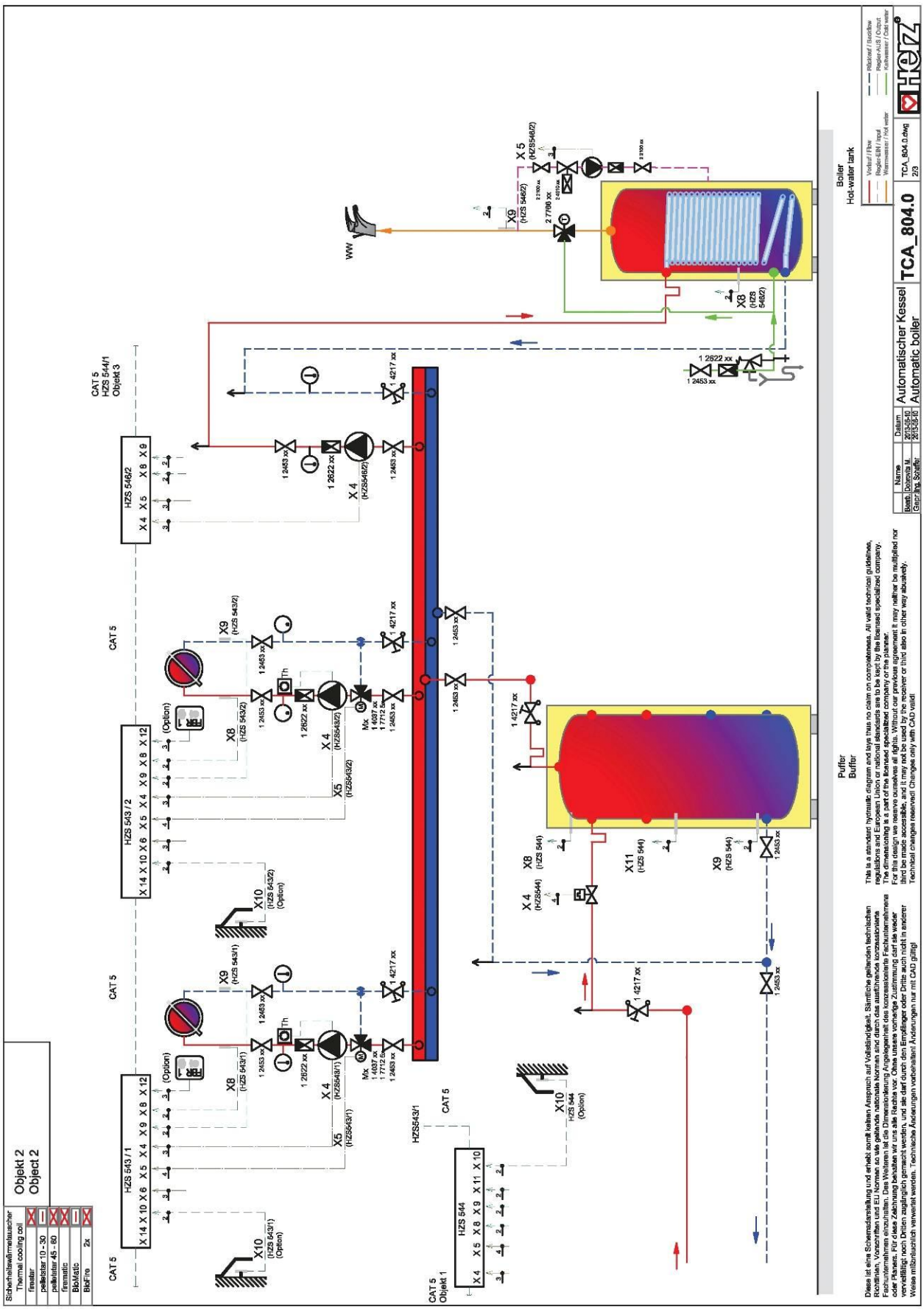
The slide bevel in the angle of about 45°C (with a smooth surface, ideal with laminate floor) is to be provided by the customer.

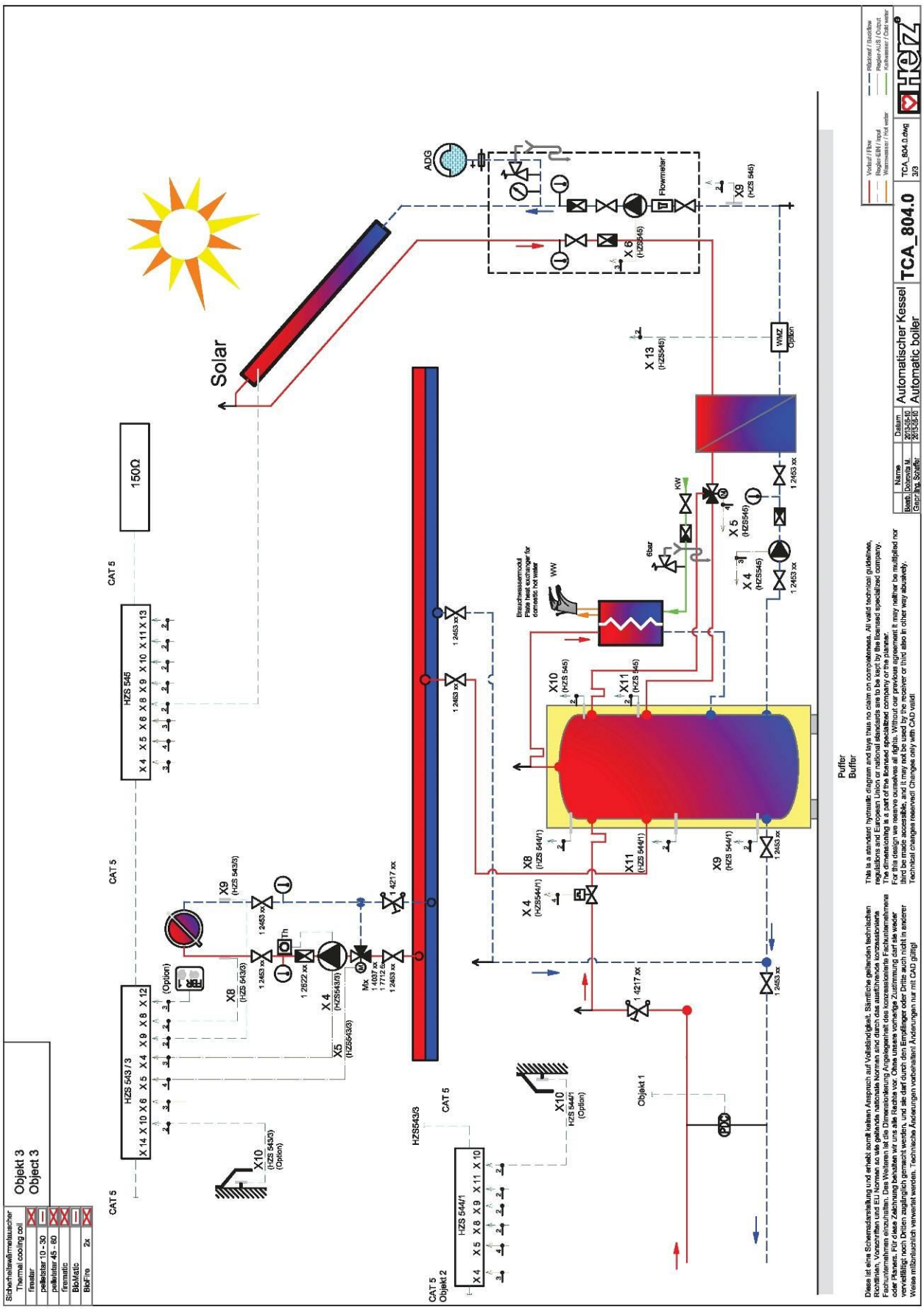
9 STANDARD DIAGRAMS

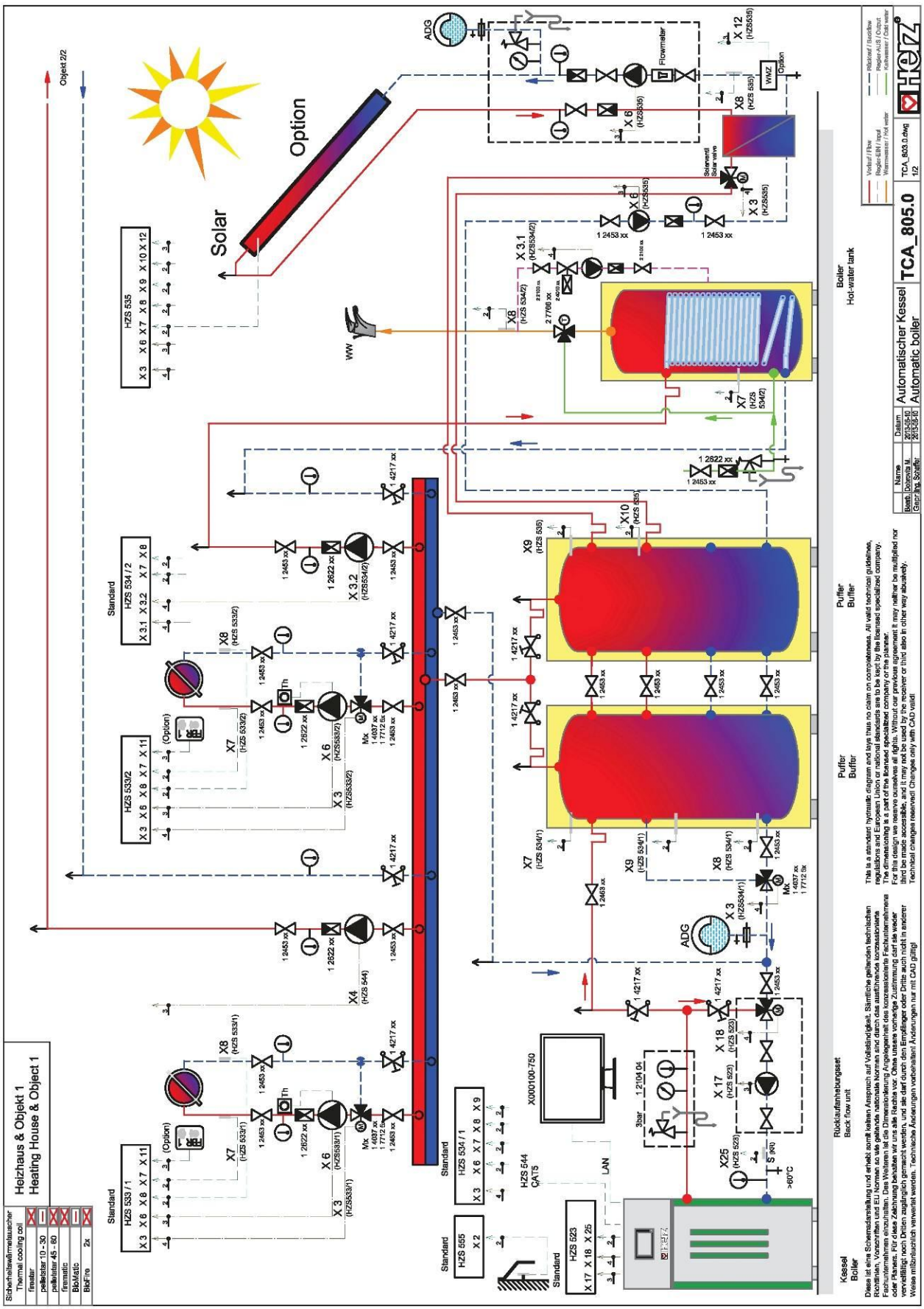

TCA_801.0
Automatischer Kessel
Automatic boiler
Datum
2008-08-18
Name
Ing. Schaller
Vorlauf / Flow
Rücklauf / Backflow
Kaltwasser / Cold water
Warmwasser / Hot water
Boiler
Hot-water tank
Puffer
Buffer
Kessel
Boiler
Rücklaufanhebungsset
Back flow unit
Standard
HZS 534 / 2
HZS 533 / 1
HZS 534 / 1
HZS 555
HZS 523
Thermal cooling coil
fireater
pelletstar 10 - 30
pelletstar 45 - 60
firematic
BioMatic
BioFire
ADG
LAN
Diese Schemadarstellung und erhebt somit keinen Anspruch auf Vollständigkeit. Sämtliche geltenden technischen Richtlinien, Vorschriften und EU Normen sowie geltende nationale Normen sind durch das ausführende Konzessionierte Fachunternehmen einzuhalten. Das Weiteren ist die Dimensionierung Angelegenheit des konzessionierte Fachunternehmens oder Planers. Herz übernimmt keine Haftung für Schäden, welche durch Nichtbeachtung dieser Angaben vorsätzlich oder fahrlässig noch Dritter zugefügt garnacht werden, und sie darf durch den Empfänger oder Dritte auch nicht in anderer Weise mißbräuchlich verwertet werden. Technische Änderungen vorbehalten! Änderungen nur mit CAD gültig!
This is a standard hydraulic diagram and lays thus no claim on completeness. All valid technical guidelines, regulations and European Union or national standards are to be kept by the licensed specialized company. The dimensioning is a part of the licensed specialized company or the planner. For the installation and operation of the system it may neither be multiplied nor then to made accessible, and it may not be used by the receiver or third also in other way misuseby. Technical changes reserved! Changes only with CAD valid!

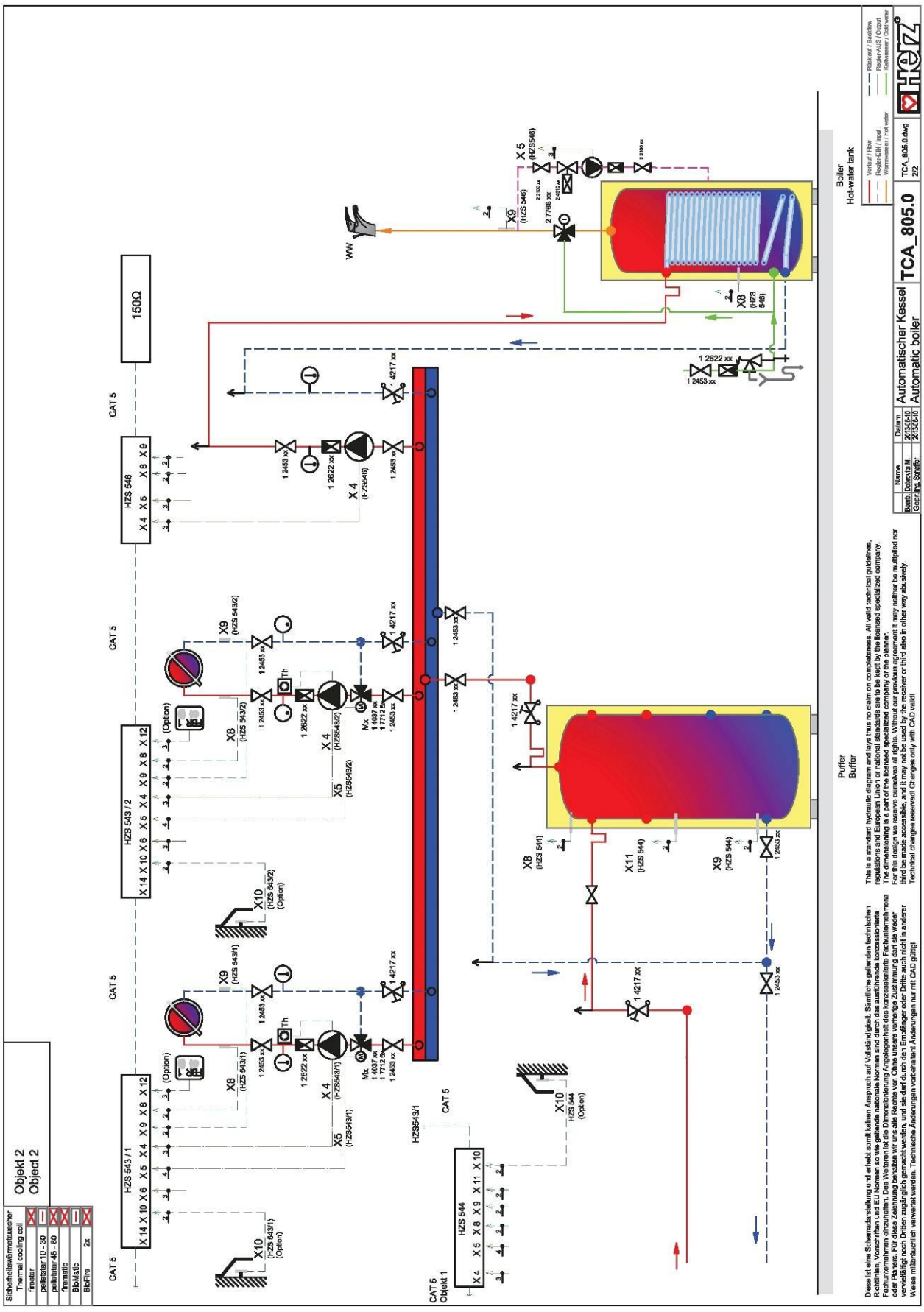

Solar
Option
Automatischer Kessel
Automatic boiler
TCA_802.0
Boiler
Hot-water tank
Puffer
Buffer
Kessel
Boiler
Rücklaufanhebungsset
Back flow unit
Flowmeter
ADG
WW
LAN
Standard
Option
HZS 535 / 1
HZS 534 / 2
HZS 534 / 1
HZS 533 / 2
HZS 533 / 1
HZS 555
HZS 523
Sicherheitswärmetauscher
Thermal cooling coil
fmatar
pelletstar 10 - 30
pelletstar 45 - 60
firematic
BioMatic
BioFire


Heizhaus & Objekt 1
Heating House & Object 1
TCA_804.0
Automatischer Kessel
Automatic boiler
Option
Solar
Flowmeter
Boiler
Hot-water tank
Puffer
Buffer
Kessel
Boiler
Rücklaufanhebungset
Back flow unit
Standard
Objekt 2/3
Objekt 3/3
Automatic boiler


Objekt 2
Object 2
TCA_804.0
Automatischer Kessel
Automatic boiler
Boiler
Hot-water tank
Puffer
Buffer
WW
CAT 5
HZS 544/1
Objekt 3
HZS 546/2
HZS 543 / 2
HZS 543 / 1
HZS 544
HZS543/1
CAT 5
Objekt 1
(Option)
Mix
Th
Vorlauf / Flow
Rücklauf / Backflow
Kessel-Kalt / Input
Kessel-Heiß / Output
Warmwasser / Hot water
Kaltwasser / Cold water
TCA_804.0.dwg
2/3
Name
Datum
Beeth. Dolenda M.
2013/5/40
Georg Ing. Scheffer
2013/5/40


Solar
ADG
Flowmeter
150Ω
CAT 5
HZS 546
HZS 543 / 3
HZS543/3
HZS 544/1
Objekt 1
Objekt 2
Puffer
Buffer
Automatischer Kessel
Automatic boiler
TCA_804.0
TCA_804.0.dwg
3/3
Objekt 3
Object 3
Sicherheitswärmetauscher
Thermal cooling coil
frestar
pelletstar 10 - 30
pelletstar 45 - 60
firematic
BioMatic
BioFire
Vorlauf / Flow
Rücklauf / Backflow
Kaltwasser / Cold water
Warmwasser / Hot water
Name
Datum
Bearb.
Gezeichn.
Dolomite M.
Scheffer
2013/5/40
2013/6/40
Technische Änderungen vorbehalten! Changes reserved! Changes only with CAD valid!


Heizhaus & Objekt 1
Heating House & Object 1
TCA_805.0
Automatischer Kessel
Automatic boiler
Solar
Option
Puffer
Buffer
Boiler
Hot-water tank
Kessel
Boiler
Rücklaufanhebungsset
Back flow unit
Standard
Flowmeter
WMZ
ADG
WW
LAN
HZS 544
CAT5
>60°C
Sicherheitswärmetauscher
Thermal cooling coil
finestar
pelletstar 10 - 30
pelletstar 45 - 60
firematic
BioMatic
BioFire
2x


Objekt 2
Object 2
TCA_805.0
Automatischer Kessel
Automatic boiler
Boiler
Hot-water tank
Puffer
Buffer
150Ω
CAT 5
HZS 543/1
HZS 543/2
HZS 546
HZS 544
HZS543/1
CAT 5 Objekt 1
WW
X4 (HZS546)
X5 (HZS546)
X8 (HZS 546)
X9 (HZS 546)
X4 (HZS543/2)
X5 (HZS543/2)
X8 (HZS 543/2)
X9 (HZS 543/2)
X4 (HZS543/1)
X5 (HZS543/1)
X8 (HZS 543/1)
X9 (HZS 543/1)
X8 (HZS 544)
X9 (HZS 544)
X11 (HZS 544)
X10 (HZS 543/1) (Option)
X10 (HZS 543/2) (Option)
X10 HZS 544 (Option)
(Option)
Mix
Th
Vorlauf / Flow
Rücklauf / Backflow
Kesselfühler / Boiler sensor
Warmwasser / Hot water
Name
Datum
Bearb. Dolenda M. 2013/5/40
Gezr. Ing. Scheffer 2013/5/40
TCA_805.0.dwg
2/2
Sicherheitswärmetauscher
Thermal cooling coil
fmatic
pelletstar 10 - 30
pelletstar 45 - 60
fmematic
BioMatic
BioFire
2x

10 ELECTRICAL DOCUMENTATION

10.1 Safety regulations

The equipment is state of the art and fulfils all required safety standards.

It may only be used according to the technical information and the safety regulations which are listed below. When using the device you have to observe the essential legal and safety regulations for the specific application.

A safe operation is no longer possible if the device

- has visible damage
- no longer works
- has been stored for long periods under unfavourable conditions

If so, the device must be taken out of service and secured against inadvertent operation.

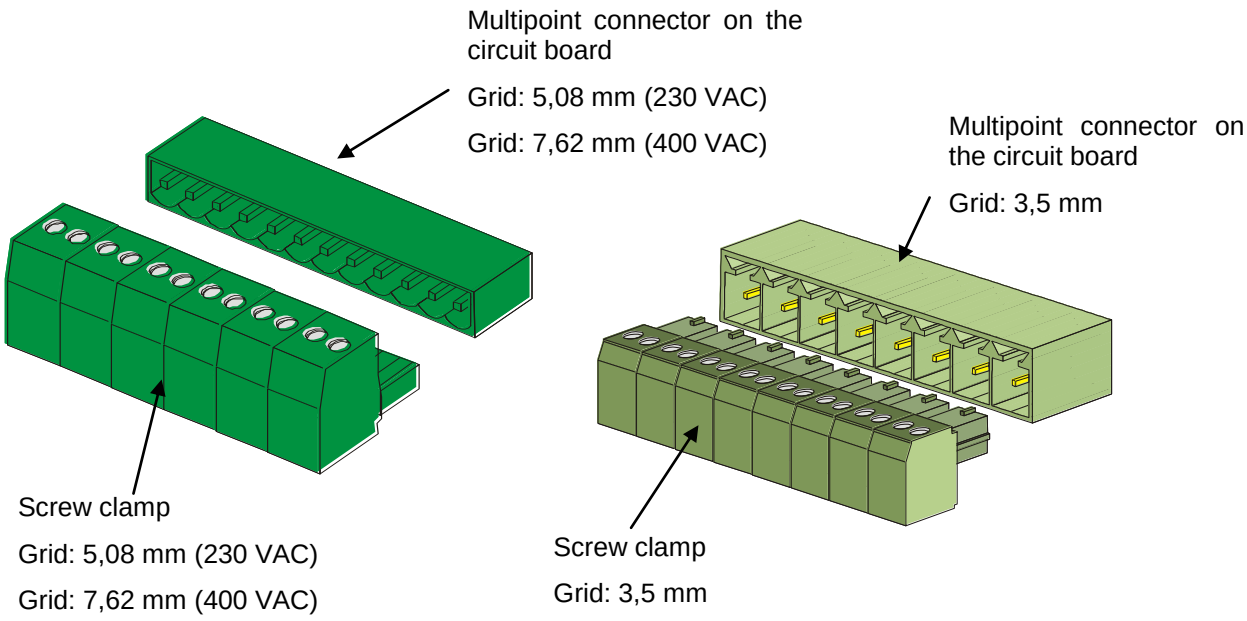
10.2 General

All inputs / outputs and supplies are plugged in direct to the operating part and extension module.

It is ensured that it is not possible to change between 230V AC, 400V AC and low voltage, which may lead to electronic defects of connected equipment as well as probes. However, it is possible for 230V AC connections (pumps, mixers, etc.) to be swapped around. This cannot be avoided due to the number of connections.

However, swapping of the low voltage inputs / outputs is possible, and this will not cause electronic or probe defects.

10.3 Plug system used


Multipoint connector on the circuit board
Grid: 5,08 mm (230 VAC)
Grid: 7,62 mm (400 VAC)
Multipoint connector on the circuit board
Grid: 3,5 mm
Screw clamp
Grid: 5,08 mm (230 VAC)
Grid: 7,62 mm (400 VAC)
Screw clamp
Grid: 3,5 mm

10.4 Heating control system HZS 555-S

The HCS 555-S is an intelligent terminal for programming and visualization of automated processes. The diagnostic process and the operation and monitoring of automated processes are simplified by this installation terminal.

Via CAN-Bus it is connected with the active component.

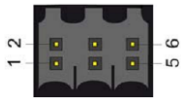
A touch screen is used to enter data and process parameters. The output is displayed on a 5.7 "VGA TFT colour display.

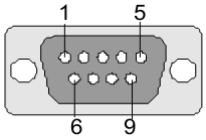
The LSE mask editor can create graphics on a PC and can save on the installation terminal.

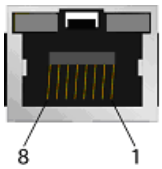
The available interfaces can be used for transferring process information or for configuration of the installation terminal. A micro SD card is storage medium for the operating system, application and application data.

10.5 Pin configuration HZS 555-S

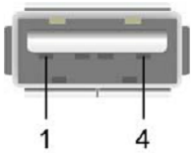
X1 - Supply		
	Pin	**Function**
	1	n.c.
	2	+24 V DC
	3	GND
	4	GND

X2 - CAN		
	**Pin**	**Function**
	1	CAN A (for external modules)
	2	CAN B (for external modules)
	3	CAN A (internal pre-wired)
	4	CAN B (internal pre-wired)
The termination of the CAN bus is internal to the electronics!	5	GND
The total CAN bus cable length may be max. 200 metres.	6	-

X3 – RS232 (Front view)		
	**Pin**	**Function**
	1	DCD
	2	RX
	3	TX
	4	DTR
	5	GND
	6	DSR
	7	RTS
	8	CTS
	9	RI

X4 – Ethernet		
	**Pin**	**Function**
	1	TX +
	2	TX -
	3	RX +
	4	n.c.
	5	n.c.
	6	RX -
	7	n.c.
	8	n.c.

X5 – Mini USB Typ B (V1.1) (not used)		
	Pin	**Function**
	1	+5V
	2	D -
	3	D +
	4	-
	5	GND

X6 – USB 2.0 (Typ A, Full Speed, 12 Mbit/s)		
	**Pin**	**Function**
	1	+5V_USB
	2	D -
	3	D +
	4	GND

It should be noted that many USB devices on the market do not adhere the relevant EMC requirements of the industrial environment. When such devices are connected, it may cause a malfunction.

Connectors to be used:

CAN-Bus:	6-pole Weidmüller-Connector B2L3, 5/6
USB:	4-pole Typ A (Downstream Connector)
Ethernet:	8-pole RJ45
Supply:	4-pole Phönix-Connector witch terminal technique MC1, 5/4-ST -3,5
	4-pole Phönix-Stecker with spring balancer terminal F K-MCP1, 5/4-ST -3,5

10.6 Cleaning of the Touch-Screens

ATTENTION!

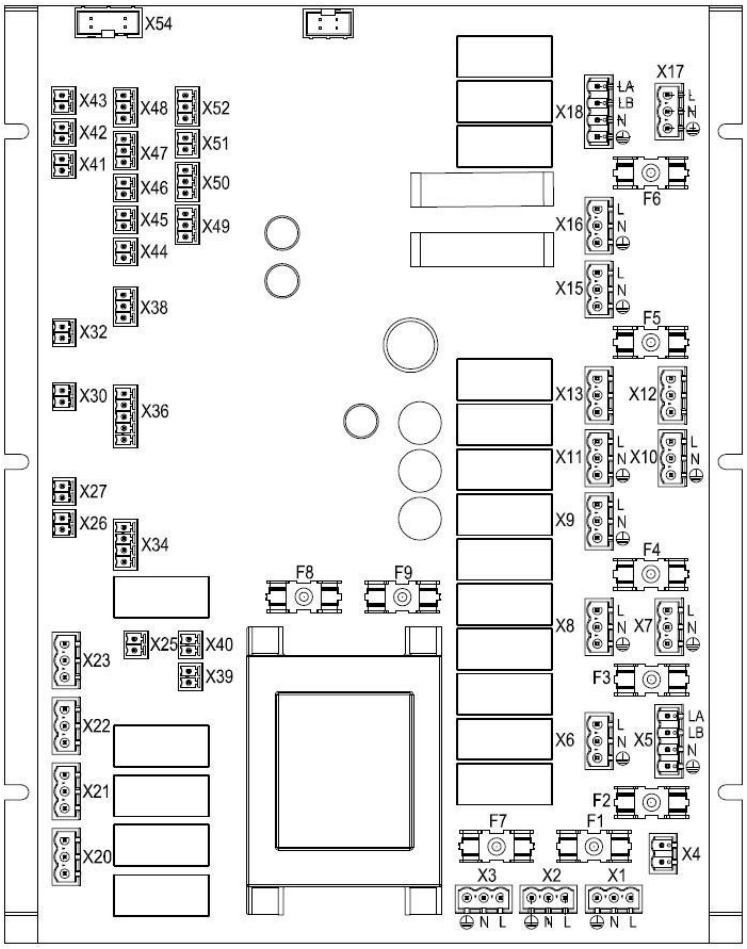
Before cleaning the touch screen, turn off the terminal so that you cannot cause functions or commands by touching the touch screen.

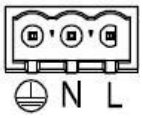
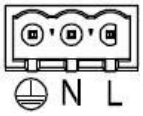
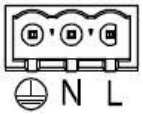
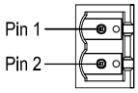
The touch screen of the terminal may only be cleaned with a damp, soft cloth. When moistening the cloth use screen cleaner, for example: anti-static foam cleaner, water with detergent or alcohol. First spray the cleaning solution on the cloth, not directly on the terminal. It is to be avoided, that the cleaning solution for example through ventilation slots on the casing of the terminal can enter the electronics.

Do not use corrosive cleaning solutions, chemicals abrasives and hard objects which can scratch and damage the touch screen. If the terminal is polluted with toxic, caustic chemicals then clean the terminal carefully to prevent chemical burns!

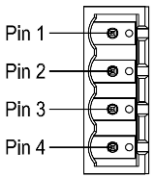
To ensure optimal operation of the terminal, clean the touch screen in regular intervals. To keep the life of the touch screen as long as possible, an operation with the finger is recommended.

10.7 Operating part



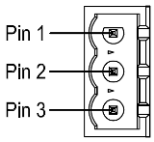
X1 – 230 V AC-Mains supply line – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Output for extension module not over STL – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase (over 10A fuse)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X3 – 230 V AC- Output for extension module over STL – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase switched over STL (over 10A fuse)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X4 – STL Safety contact (230 V AC) – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	L-STB	Phase L- switched over STL

X5 – 230 V AC-Relay output:
Ignition heating and ignition ventilator – Phönix RM 5,08 (DO01 and DO05)



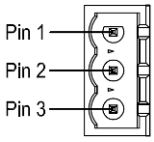
Pin	Signal	Function
1	$L_{Heating}$	Relay output heating – switched over STL
2	$L_{Ventilator}$	Relay output ventilator – switched over STL
3	N	Neutral conductor
4	PE	Earthed conductor

X6 – 230 V AC-Relay output: Suction turbine – Phönix RM 5,08 (DO02)
**** by flexible discharge system:*** **Pellet stirrer – Phönix RM 5,08 (DO02)**



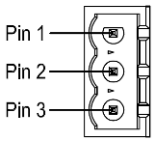
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X7 – 230 V AC-Relay output: Grid cleaning – Phönix RM 5,08 (DO03)



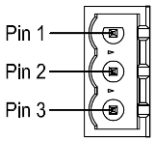
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X8 – 230 V AC-Relay output: Heat exchanger cleaning – Phönix RM 5,08 (DO04)



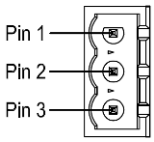
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X9 – 230 V AC-Relay output: Motor discharge screw – Phönix RM 5,08 (DO06)



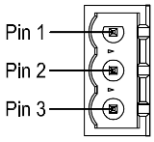
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X10 – 230 V AC-Relay output: BFP open – Phönix RM 5,08 (DO07)



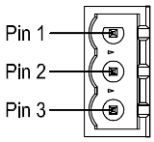
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X11 – 230 V AC-Relay output: Container screw – Phönix RM 5,08 (DO08)



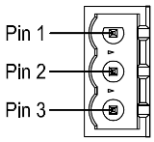
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X12 – 230 V AC-Relay output – Phönix RM 5,08 (DO09) – not used



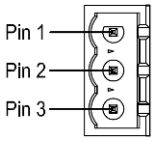
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X13 – 230 V AC-Relay output – Phönix RM 5,08 (DO10) – not used



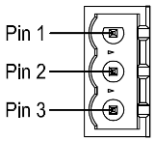
Pin	Signal	Function
1	L	Relay output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X15 – 230 V AC-Phase angle control: ID fan – Phönix RM 5,08 (Phase2)



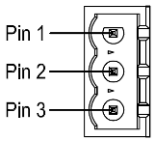
Pin	Signal	Function
1	L	Output phase angle control. – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X16 – Triac output: Stoker screw – Phönix RM 5,08



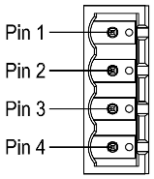
Pin	Signal	Function
1	L	Triac output – switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X17 – 230 V AC-Relay output (3A / 3 Pole): Back flow pump – Phönix RM 5,08 (DO11)



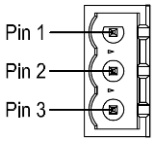
Pin	Signal	Function
1	L	Relay output – not switched over STL
2	N	Neutral conductor
3	PE	Earthed conductor

X18 – 230 V AC-Relay output (3A / 4 Pole): Reverse mixer on and reverse mixer off – Phönix RM 5,08 (DO12 and DO13)



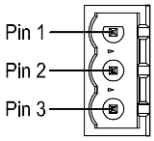
Pin	Signal	Function
1	L_{ON}	Relay output RM on – not switched over STL
2	L_{OFF}	Relay output RM off – not switched over STL
3	N	Neutral conductor
4	PE	Earthed conductor

X20 – Relay output (230V AC or +24V DC / 3A / 3 Pole) with potential-free contact: Sum annoyance – Phönix RM 5,08 (DO15)



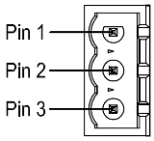
Pin	Signal	Function
1	NC	Normally Closed
2	C	Common
3	NO	Normally Open

X21 – Relay output (230V AC or +24V DC / 3A / 3 Pole) with potential-free contact: Temperature monitoring fuel storage – Phönix RM 5,08 (DO16)



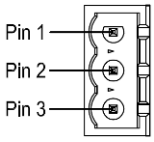
Pin	Signal	Function
1	NC	Normally Closed
2	C	Common
3	NO	Normally Open

X22 – Relay output (230V AC or +24V DC / 3A / 3 Pole) with potential-free contact: Operating alarm unit – Phönix RM 5,08 (DO17)



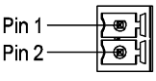
Pin	Signal	Function
1	NC	Normally Closed
2	C	Common
3	NO	Normally Open

X23 – Relay output with potential-free contact: Release stoker screw – Phönix RM 5,08 (DO18)



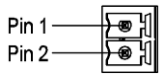
Pin	Signal	Function
1	NC	Normally Closed
2	C	Common
3	NO	Normally Open

X25 – Temperature input Back-flow temperature – Phönix RM 3,5 (AI2)



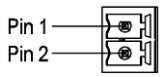
Pin	Signal	Function
1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
2	AGND	AGND

X26 – Temperature input Boiler temperature – Phönix RM 3,5 (AI3)



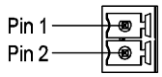
Pin	Signal	Function
1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
2	AGND	AGND

X27 – Temperature input Stoker screw – Phönix RM 3,5 (AI4)



Pin	Signal	Function
1	AI4	Analog input AI4 PT1000 (-10 … +200°C)
2	AGND	AGND

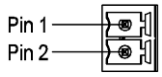
X30 – Temperature input Flue gas temperature – Phönix RM 3,5 (AI7)



Pin	Signal	Function
1	AI7	Analog input AI7 PT1000 (0 … +600°C)
2	AGND	AGND

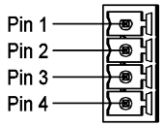
X31 – Temperature input Clamping unit temperature – KTY sensor is fixed on the circuit board!!

X32 – Temperature input Combustion room temperature – Phönix RM 3,5 (AI9)



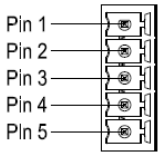
Pin	Signal	Function
1	AI9+	Analog input AI9+ Combustion room temperature NiCr-Ni (K-Typ) (0 … +1200°C)
2	AI9-	Analog input AI9-

X34 – Lambda sensor LSM11 – Phönix RM 3,5 (AI11)



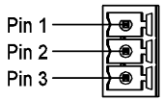
Pin	Signal	Function
1	AI11+	Analog input AI11 Lambda sensor signal input pos.
2	AI11-	Analog input. AI11 Lambda sensor signal input neg.
3	12 V AC1	Sensor heating 12 V AC
4	12 V AC2	Sensor heating 12 V AC

X36 – Excitation FC – WAGO 733-335 RM2,5 (AI13) – not used



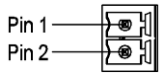
Pin	Signal	Function
1	PWM1	Excitation FC – not used
2	GND	GND – not used
3	AI13	Analog input AI13 – not used
4	GND	GND – not used
5	+24V	+24V supply (over 0,5 A PTC-fuse hedged to the outside) – not used

X38 – Analog output Secondary air flap – Phönix RM 3,5 – not used



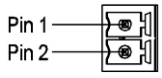
Pin	Signal	Function
1	+24 V	Supply +24 V DC Analog output (over 0,5A PTC-fuse hedged to the outside)
2	AO	Analog output (0 … 10 V)
3	AGND	AGND

X39 – Digital input – Burner stop – Phönix RM 3,5 (DI1)

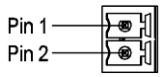


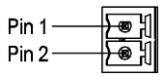
Pin	Signal	Function
1	+24 V	Supply +24 V DC digital inputs
2	DI1	Digital input 1: Burner stop

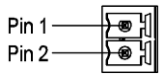
X40 – Digital input – Input Temp. control – Phönix RM 3,5 (DI2)

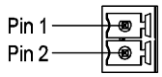


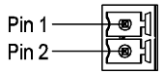
Pin	Signal	Function
1	+24 V	Supply +24 V DC digital inputs
2	DI2	Digital input 2: Temp. control

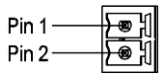
X41 – Digital input – BFP open – Phönix RM 3,5 (DI3)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI3	Digital input 3: BFP open

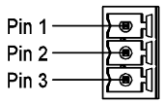
X42 – Digital input – BFP closed – Phönix RM 3,5 (DI4)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI4	Digital input 4: BFP closed

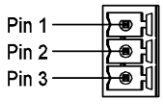
X43 – Digital input – Motor protection discharge screw – Phönix RM 3,5 (DI5)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI5	Digital input 5: Motor protection discharge screw

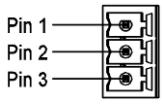
X44 – Digital input – Ash door – Phönix RM 3,5 (DI6)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI6	Digital input 6: Ash door

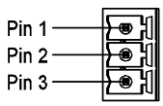
X45 – Digital input – Cover end switch Discharge screw – Phönix RM 3,5 (DI7) – not used			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI7	Digital input 7: Cover end switch Discharge screw

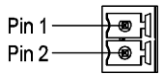
X46 – Digital input – Additional input – Phönix RM 3,5 (DI13)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI13	Digital input 13: Additional input

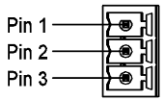
X47 – Digital input – Barrier level sensor – Phönix RM 3,5 (DI14)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI14	Digital input 14: Barrier level sensor
	3	GND	GND

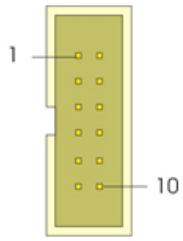
X48 – Digital input – Interim container level – Phönix RM 3,5 (DI10)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI10	Digital input 10: Interim container level
	3	GND	GND

X49 – Digital input – Inductive sensor Grate cleaning – Phönix RM 3,5 (DI11)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI11	Digital input 11: Inductive sensor Grate cleaning
	3	GND	GND

X50 – Digital input – Inductive sensor Vacutrans flap – Phönix RM 3,5 (DI12)			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI12	Digital input 12: Inductive sensor Vacutrans flap
	3	GND	GND

X51 – Digital input – Phönix RM 3,5 (DI15) – not used			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI15	Digital input 15: not used

X52 – Digital input – Speed feedback ID fan – Phönix RM 3,5			
	**Pin**	**Signal**	**Function**
	1	+24 V	Supply +24 V DC digital inputs
	2	DI	Digital input: Speed feedback ID fan
	3	GND	GND

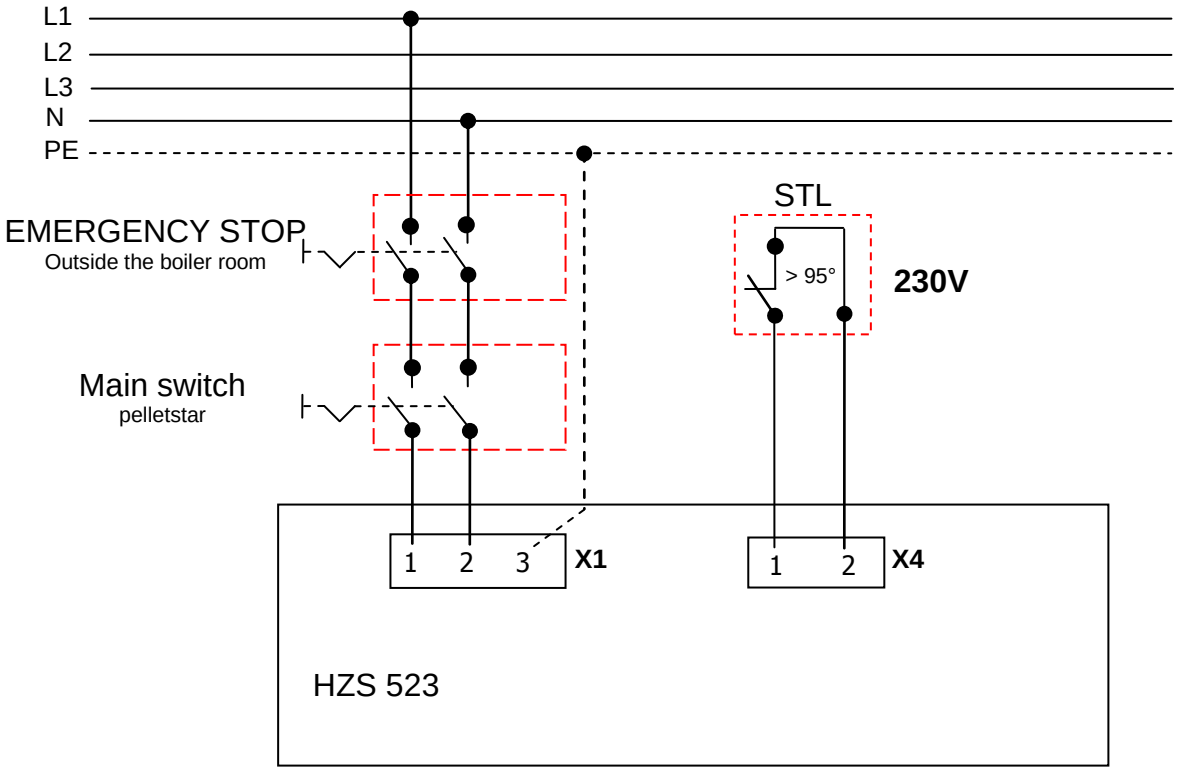
X54 – CAN interface			
	**Pin**	**Signal**	**Function**
	1	CAN_A	CAN-Signal Low
	2	CAN_B	CAN-Signal High
	3	GND	
	4	GND	
	5	+ 24V	24 V supply output
	6	+ 24V	24 V supply output
	7	+ 24V	24 V supply output
	8	unused	
	9	GND	
	10	GND	

Fuses:

A change of protection may only be carried out in defined 230V AC supply by trained specialists. The current safety specifications and regulations in force must be adhered too!

Fuse	Value	Fused plug(s)	Allocation
F1	10 A	X2	Protection for 230 V-supply for internal extensions (not over STL)
F2	10 A	X3, X4, X5 (Pin1), X6	Protection Ignition heating/Suction turbine(Pellet stirrer) and 230 V-supply for internal extensions (over STL)
F3	3,15 A	X5 (Pin2), X7, X8	Protection Grate cleaning/Heat exchanger cleaning and Ignition Ventilator
F4	5,0 A	X9, X10, X11, X12, X13	Protection Discharge motor screw/BFP open and Ash discharge
F5	3,15 A	X15, X16	Protection Stoker screw, Phase angle ID fan resp. Triac outputs
F6	5,0 A	X17, X18	Protection Reverse flow elevation pump/Back flow mixer Open and Close
F7	250 mA	–	Protection Transformer
F8	2,5 A	X34	Protection Heating Lambda
F9	2,5 A	–	Protection internal +24 V

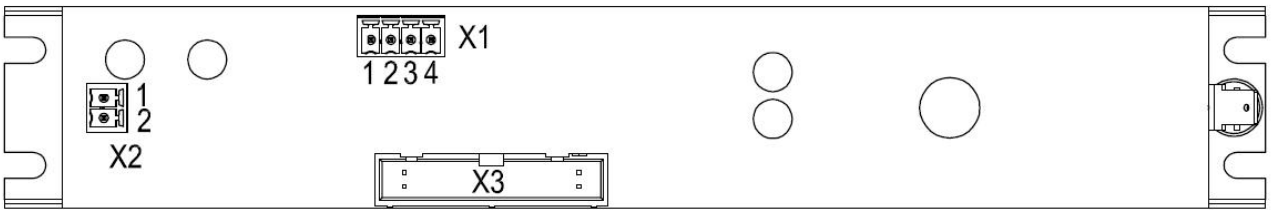
10.8 Safety temperature limiter (STL) – cut-off



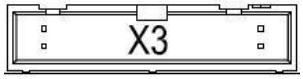
If the STL release, heating pumps and mixers are still active. At the firing system an emergency stop has to be attached on a safe and easily position outside the boiler room, which switches off the combustion equipment and fuel supply. Lightning, flue gas equipment and heat transfer devices may not switched off.

10.9 Extension modules internal

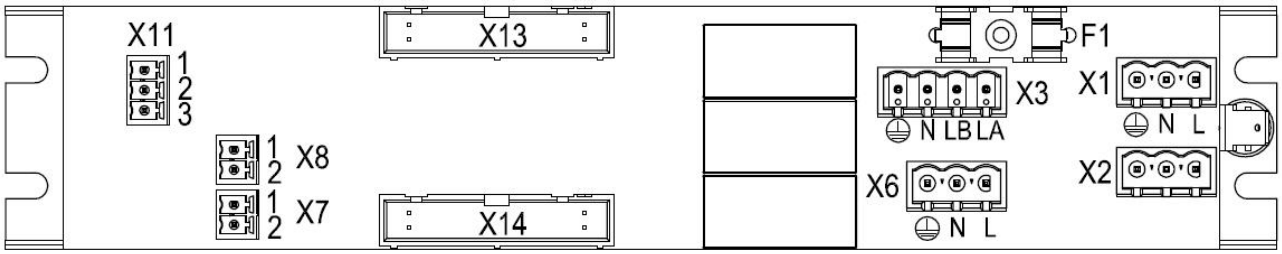
10.9.1 Extension controller internal (HZS 532)

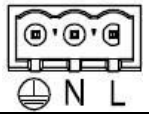


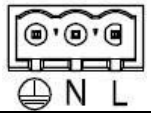
X1 – Connection with CPU (HZS555) – Phönix RM3,5			
1 2 3 4	**Pin**	**Signal**	**Function**
	1	+24 V	+24 V supply for electronics
	2	CAN A	CAN-Signal Low
	3	CAN B	CAN-Signal High
4-pole plug with screw connection	4	GND	Ground
X2 – Temperature input Outside temperature – Phönix RM 3,5 (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI	Analog input Outside temp. PT1000 (-50 … +70°C)
2-pole plug with screw connection	2	AGND	AGND

X3 – flat band connection to internal extension modules – multipole plug-in connector 26-pole	
	About this flat band connection the controller communicates with the different internal extension modules. The required supply voltages on the internal extensions are performed on this connection!

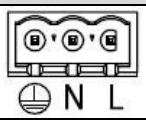
10.9.2 Heating circuit module internal (HZS 533)



X1 – 230 V AC-Mains supply line – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

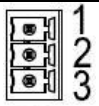
X2 – 230 V AC-Mains derivation – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

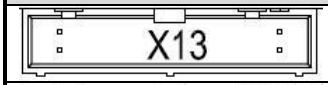
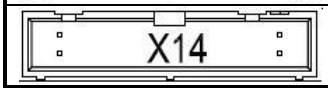
X3 – 230 V AC-Relay output: Mixer On and Off – Phönix RM 5,08 (RO01 and RO02)			
	Pin	**Signal**	**Function**
	1	$L_{Mixer\ On}$	Relay output Mixer On (230V AC / 1A / 4 Pole)
	2	$L_{Mixer\ Off}$	Relay output Mixer Off (230V AC / 1A / 4 Pole)
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

X6 – 230 V AC-Relay output: Pump – Phönix RM 5,08 (RO03)			
	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

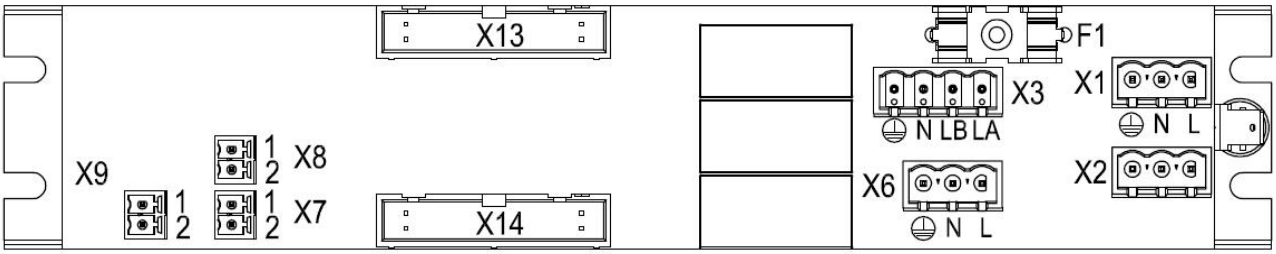
X7 – Temperature input Flow – Phönix RM 3,5 (AI1)			
	Pin	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND

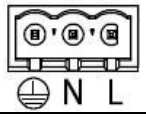
X8 – Temperature input Back flow – Phönix RM 3,5 (AI2)			
	Pin	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND

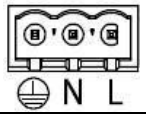
X11 – Analog input Remote control – Phönix RM 3,5				
	**Pin**	**Signal**	**Function**	**Connection**
	1	AI3	Actual value (660 – 1200 Ohm)	Pin 1 – 1
	2	AI4	Set value (1000 – 1100 Ohm)	Pin 2 – 3
3-pole plug with screw connection	3	AGND	AGND	Pin 3 – 2

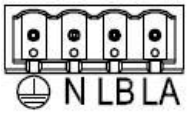
X13 and X14 – flat band connection to internal extension modules – multipole plug-in connector 26-pole	
	About this flat band connection the internal heating circuit module communicates with the controller (X13).
	For the next internal extension the signals get coded (X14).

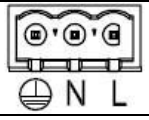
10.9.3 Hot water tank module internal (HZS 534)

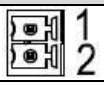
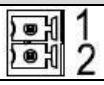
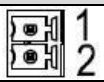
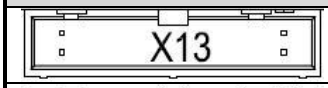
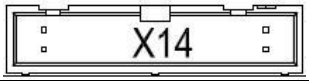


X1 – 230 V AC-Mains supply – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

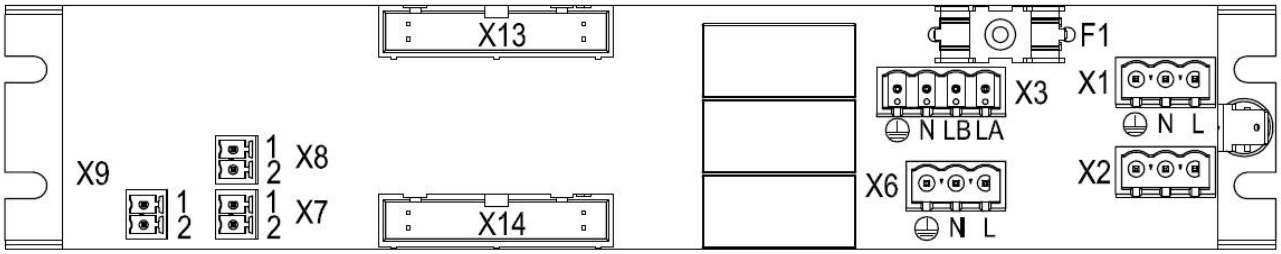
X2 – 230 V AC-Mains derivation – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

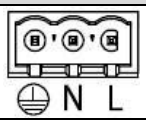
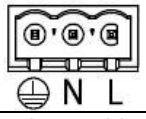
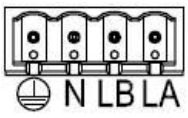
X3 – 230 V AC-Relay output: Pumps – Phönix RM 5,08 (D001 und D002)			
	**Pin**	**Signal**	**Function**
	1	L_1	Circulation pump
	2	L_2	Hot water tank pump
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

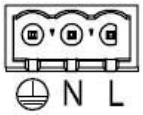
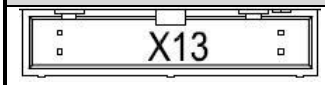
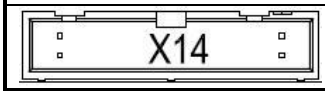
X6 – 230 V AC-Relay output: Phönix RM 5,08 (R003) – not used			
	**Pin**	**Signal**	**Function**
	1	L	Relay output
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

X7 – Temperature input Hot water tank temperature – Phönix RM 3,5 (AI1)			
	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X8 – Temperature input Circulation-temperature – Phönix RM 3,5 (AI2)			
	**Pin**	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X9 – Temperature input – Phönix RM 3,5 (AI3) – not used			
	**Pin**	**Signal**	**Function**
	1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X13 and X14 – flat band connection to internal extension modules – multipole plug-in connector 26-pole			
	About this flat band connection the internal buffer/hot water tank module communicates with the controller (X13).		
	For the next internal extension the signals get coded (X14).		

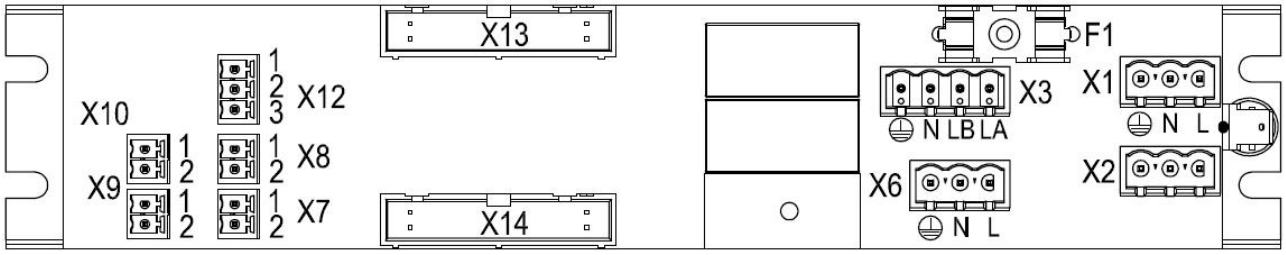
10.9.4 Buffer module internal (HZS 534)

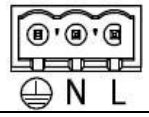
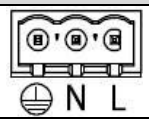


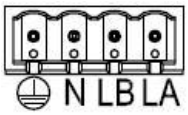
X1 – 230 V AC-Mains supply – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor
X3 – 230 V AC-Relay output: Fastrun heating – Phönix RM 5,08 (R001 and R002)			
	**Pin**	**Signal**	**Function**
	1	$L_{Fastrun\ heating1}$	Relay output On (230V AC / 1A / 4 Pole)
	2	$L_{Fastrun\ heating2}$	Relay output Off (230V / 1A / 4 Pole)
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

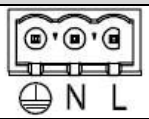
X6 – 230 V AC-Relay output: Buffer loading pump – Phönix RM 5,08 (R003)			
	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Buffer loading pump (230V AC/1A/4Pole)
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor
X7 – Temperature input Buffer top temperature – Phönix RM 3,5 (AI1)			
	Pin	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X8 – Temperature input Buffer bottom temperature – Phönix RM 3,5 (AI2)			
	Pin	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X9 – Temperature input Buffer middle temperature – Phönix RM 3,5 (AI3)			
	Pin	**Signal**	**Function**
	1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND
X13 and X14 – flat band connection to internal extension modules – multipole plug-in connector 26-pole			
	About this flat band connection the internal buffer/hot water tank module communicates with the controller (X13).		
	For the next internal extension the signals get coded (X14).		

10.9.5 Solar module internal (HZS 535)



X1 – 230 V AC-Mains supply – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation – Phönix RM 5,08			
	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

X3 – 230 V AC-Relay output: Switching valve OPEN and CLOSE – Phönix RM 5,08 (R001 und R002)			
	**Pin**	**Signal**	**Function**
	1	L_{OPEN}	Relay output Switching valve open (230V AC / 3A / 4 Pole)
	2	L_{CLOSE}	Relay output Switching valve close /Pump (230V AC / 3A / 4 Pole)
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

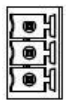
X6 – 230 V AC-TRIAC-output: Pump – Phönix RM 5,08 (R003)			
	**Pin**	**Signal**	**Function**
	1	L_{Pumpe}	Triac-output Pump (1,5A / 3 Pole)
	2	N	Neutral conductor
3-pole plug with screw connection	3	PE	Earthed conductor

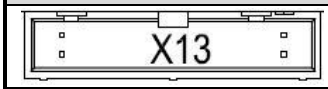
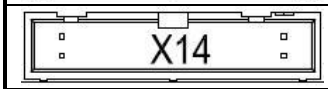
X7 – Temperature input Collector – Phönix RM 3,5 (AI1)			
	Pin	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-50 … +200°C)
2-pole plug with screw connection	2	AGND	AGND

X8 – Temperature input Back flow collector – Phönix RM 3,5 (AI2)			
	Pin	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-50 … +200°C)
2-pole plug with screw connection	2	AGND	AGND

X9 – Temperature input Tank temperature 1 – Phönix RM 3,5 (AI3)			
	Pin	**Signal**	**Function**
	1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND

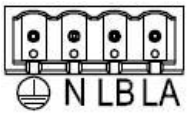
X10 – Temperature input Tank temperature 2 – Phönix RM 3,5 (AI4)			
	Pin	**Signal**	**Function**
	1	AI4	Analog input AI4 PT1000 (-10 … +120°C)
2-pole plug with screw connection	2	AGND	AGND

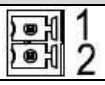
X12 – digital input – Heat meter input – Phönix RM 3,5			
	**Pin**	**Signal**	**Function**
	1	+24V	Supply +24V DC
	2	DI	Digital input: Heat meter
3-pole plug with screw connection	3	GND	Earthed conductor

X13 and X14 – flat band connection to internal extension modules – multipole plug-in connector 26-pole	
	About this flat band connection the internal solar module communicates with the controller (X13).
	For the next internal extension the signals get coded (X14).

10.9.6 Hydr. Compensator module internal (HZS534)

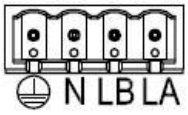
Compared with the internal buffer module (HZS534) only the following pins are used for the internal hydr. compensator module:

X3 – 230 V AC-Relay output: Pump – Phönix RM 5,08 (R001 and R002)			
	**Pin**	**Signal**	**Function**
	1	L_A	Phase Pump 2 (Secondary pump)
	2	L_B	Phase Pump 1 (Primary pump)
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

X7 – Temperature input Hydr. Compensator temperature – Phönix RM 3,5 (AI1)			
	**Pin**	**Signal**	**Function**
	1	AI1	Hydr. Compensator temperature
2-pole plug with screw connection	2	AGND	AGND

10.9.7 Net pump / Zone valve internal (HZS534)

Compared with the internal buffer module (HZS534) only the following pin is used for the internal module Net pump / Zone valve:

X3 – 230 V AC-Relay output: Pump/Zone valve – Phönix RM 5,08 (R001 and R002)			
	**Pin**	**Signal**	**Function**
	1	L_A	Relay output Open
	2	L_B	Pump / Zone valve
	3	N	Neutral conductor
4-pole plug with screw connection	4	PE	Earthed conductor

10.10 Extension modules external

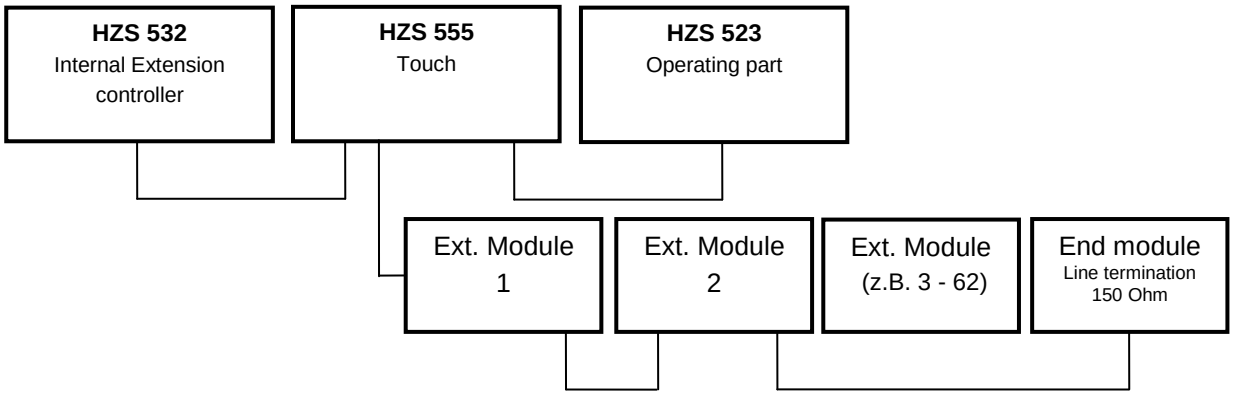
The external extension modules HCS 543-548 offers the user of biomass heating controls depending on the additional equipment 230 VAC relay or triac outputs, analog inputs for the connection of PT1000 sensors resp. of space devices and also a digital input.

The electronics is implemented in an IP2x-proof plastic housing and it can be screwed on walls or mounted on DIN rails. The tightness is via PG-screwing by the installation of the IP2x-proof plastic housing, as required for heating spaces, guaranteed.

The CAN bus resp. The 230 VAC power supply can be connected to the electronics and can be carried on to other electronics. For this continuation own terminals are provided, so that a double clamping to a terminal can be avoided. The supply of the internal electronics is produced by a transformer from 230 VAC, so no other power supplies must be connected.

CAN-Bus termination

At the two terminal devices in a CAN bus system must be a line termination. This is necessary to prevent the risk of transmission due to reflections on the line.

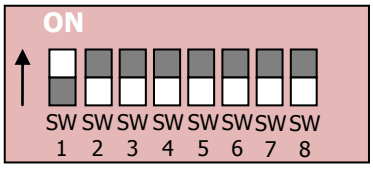


The line termination is performed with a 150 ohm resistor, which must be inserted at the end module.

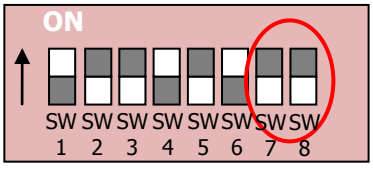
DIP-Switch station numbers (binary)

Example:

Value 1



Value 41



Important: The last two station numbers must always be 0!

CAN-BUS-Setup

Each CAN bus station gets it own station number (adjustable from 0 to 255)

Attention: Only modules to station number 63 are recognized!

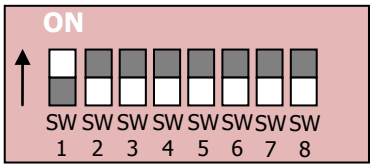
Among this number, the other bus station members can send and collect data. It should be noted that in the CAN bus system each station number can only be used once!

Conversion table:

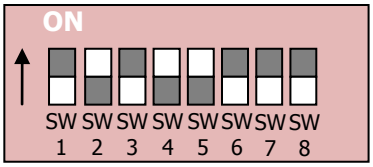
SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 7	SW 8	Station
0	0	0	0	0	0	0	0	**0**
1	0	0	0	0	0	0	0	**1**
0	1	0	0	0	0	0	0	**2**
1	1	0	0	0	0	0	0	**3**
0	0	1	0	0	0	0	0	**4**
1	0	1	0	0	0	0	0	**5**
0	1	1	0	0	0	0	0	**6**
1	1	1	0	0	0	0	0	**7**
0	0	0	1	0	0	0	0	**8**
1	0	0	1	0	0	0	0	**9**
0	1	0	1	0	0	0	0	**10**
1	1	0	1	0	0	0	0	**11**
0	0	1	1	0	0	0	0	**12**
1	0	1	1	0	0	0	0	**13**
0	1	1	1	0	0	0	0	**14**
1	1	1	1	0	0	0	0	**15**
0	0	0	0	1	0	0	0	**16**
0	1	1	1	1	1	0	0	**63**

Switch	Value
SW 1	1
SW 2	2
SW 3	4
SW 4	8
SW 5	16
SW 6	32
SW 7	64
SW 8	128

Example: set value 1



Example: set value 126

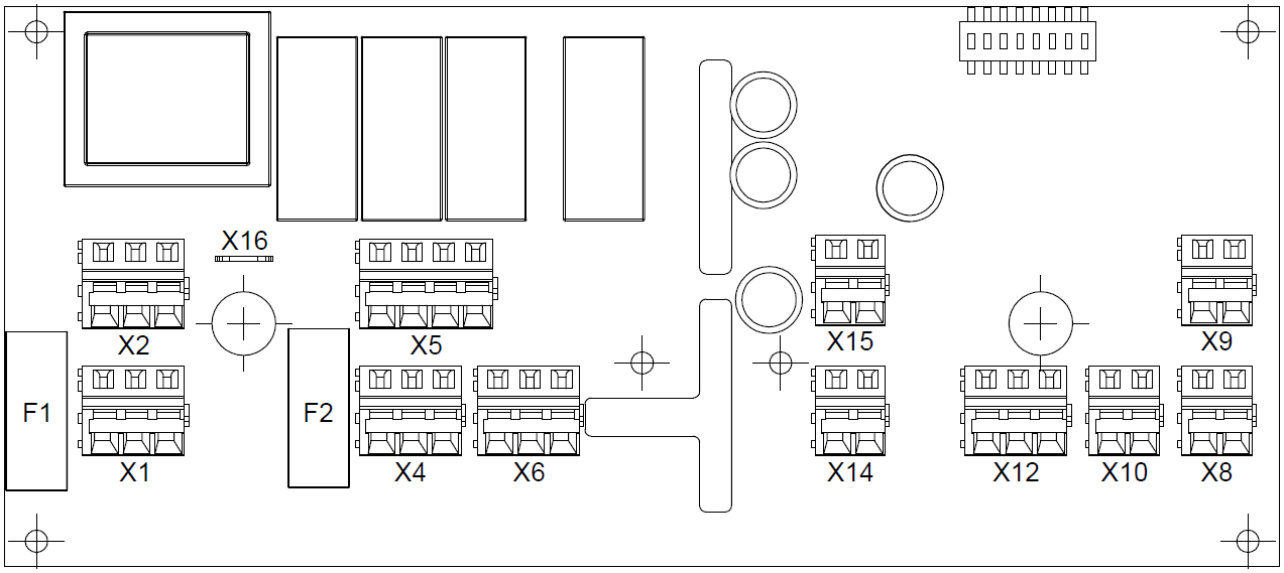


Explanation example: set value 26

The bumped off switches are SW 2, SW 4 and SW 5. The values of this switches are add together (values from above noted table). By summation of these values the result is 26.

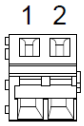
SW 2	2
SW 4	8
SW 5	16
total:	**26**

10.10.1 Heating circuit module external (HZS 543)



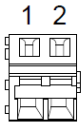
X1 – 230 V AC-Mains supply			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X4 – 230 V AC-Relay output: Pump (RO01)			
1 2 3	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X5 – 230 V AC-Relay output: Mixer Open and Close (RO02 and RO03)			
1 2 3 4	**Pin**	**Signal**	**Function**
	1	$L_{Mixer\ Open}$	Relay output Mixer Open (230V AC / 0,5A / 4 Pole)
	2	$L_{Mixer\ Close}$	Relay output Mixer Close (230V AC / 0,5A / 4 Pole)
	3	N	Neutral conductor
	4	PE	Earthed conductor
X6 – 230 V AC-Relay output: Reserve (RO04)			
1 2 3	**Pin**	**Signal**	**Function**
	1	$L_{Reserve}$	Relay output Reserve
	2	N	Neutral conductor
	3	PE	Earthed conductor
X8 – Temperature input Flow sensor (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
	2	AGND	AGND

X9 – Temperature input Back flow sensor (AI2)



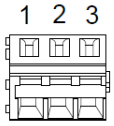
Pin	Signal	Function
1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
2	AGND	AGND

X10 – Temperature input Outside temperature (AI3)



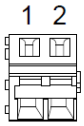
Pin	Signal	Function
1	AI3	Analog input AI3 PT1000 (-50 … +70°C)
2	AGND	AGND

X12 – Analog input Remote control (AI4 and AI5)



Pin	Signal	Function
1	AI4	Actual value (660 – 1200 Ohm)
2	AI5	Set value (1000 – 1100 Ohm)
3	AGND	AGND

X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection



Pin	Signal	Function
1	CAN A	CAN Low
2	CAN B	CAN High

X16 – Ground connection

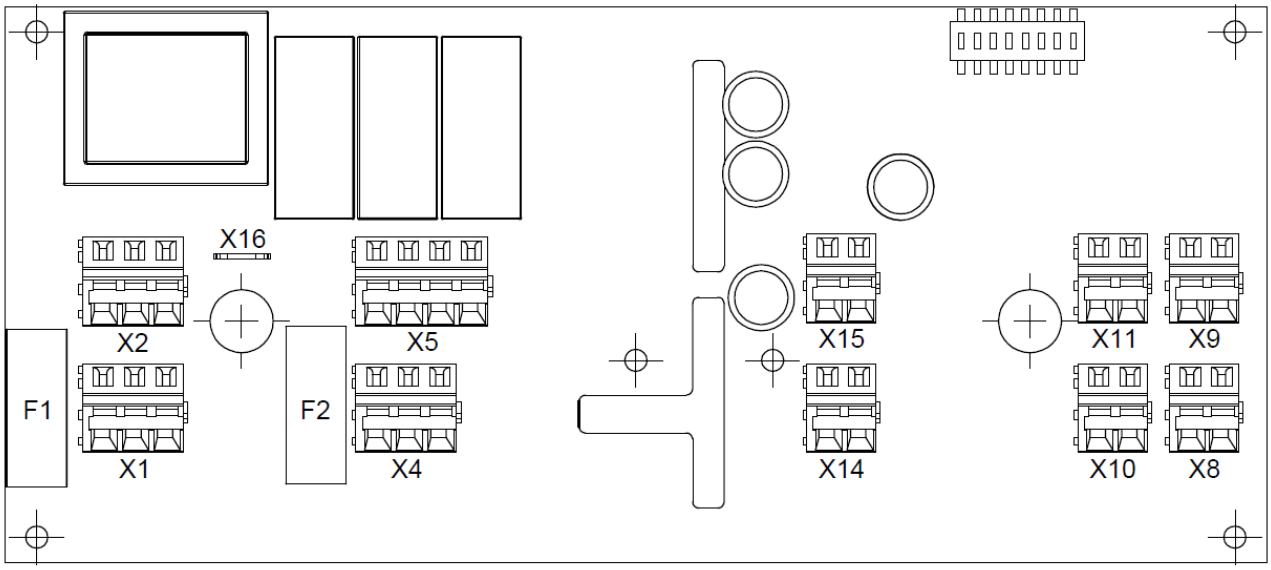
The delivery is with dummy cover on the cable entries. They can be replaced by PG7 (low voltage wiring) or PG 11 (230V lines) fittings. The fittings are not included!

The opening of the covers and the connection of the cables may only be carried out by disconnected 230 V AC-supply by trained specialists. The current safety specifications and regulations in force must be adhered too! Do not perform wiring under mains voltage!

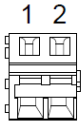
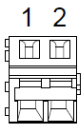
Only when all the wiring is done and the case is closed, X1 (power supply 230 VAC) will be supplied.

ATTENTION: On the electronics are contactable 230 V voltages! Connection stuck not under voltage!

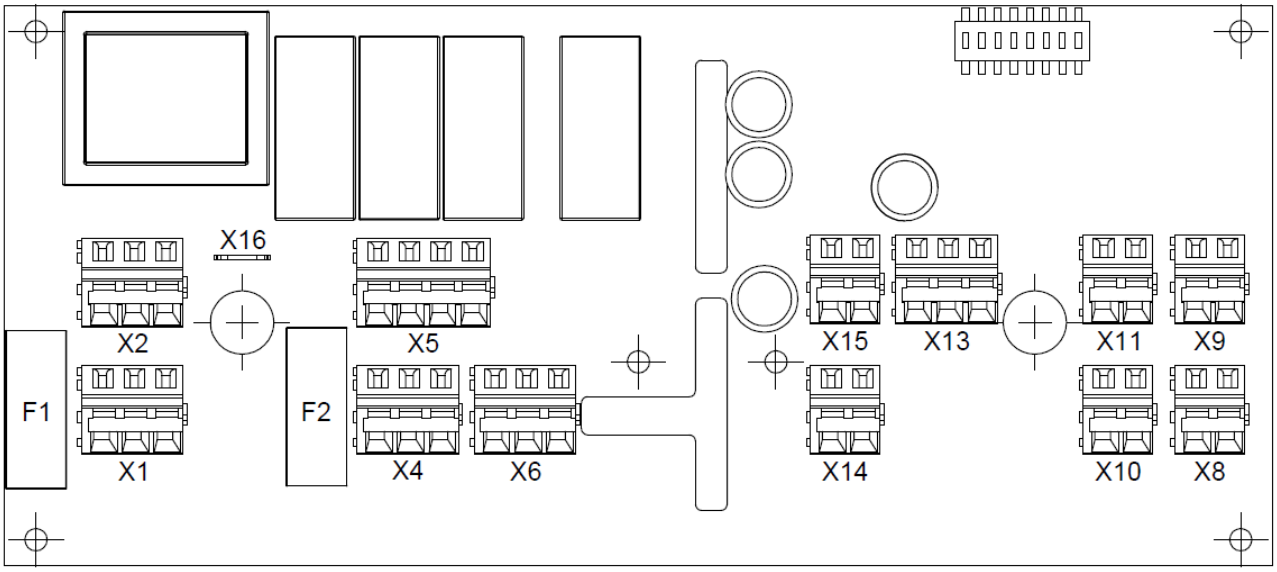
10.10.2 Buffer module external (HZS 544)

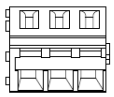
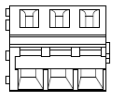


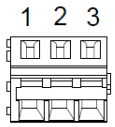
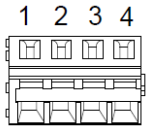
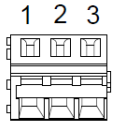
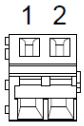
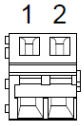
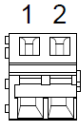
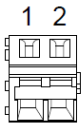
X1 – 230 V AC-Mains supply			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X4 – 230 V AC-Relay output: Buffer loading pump (RO01)			
1 2 3	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X5 – 230 V AC-Relay output: Rapid heating up valve on and off (RO02 and RO03)			
1 2 3 4	**Pin**	**Signal**	**Function**
	1	L_{On}	Relay output On (230V AC / 1A / 4 Pole)
	2	L_{Off}	Relay output Off (230V AC / 1A / 4 Pole)
	3	N	Neutral conductor
	4	PE	Earthed conductor
X8 – Temperature input Buffer – Top – Temperature (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
	2	AGND	AGND
X9 – Temperature input Buffer – Bottom – Temperature (AI2)			
1 2	**Pin**	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
	2	AGND	AGND

X10 – Temperature input Outside temperature (AI3)			
1 2	**Pin**	**Signal**	**Function**
	1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
	2	AGND	AGND
X11 – Temperature input Buffer – Middle – Temperature (AI4)			
1 2 	**Pin**	**Signal**	**Function**
	1	AI4	Analog input AI4 PT1000 (-50 … +70°C)
	2	AGND	AGND
X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection			
1 2 	**Pin**	**Signal**	**Function**
	1	CAN A	CAN Low
	2	CAN B	CAN High
X16 – Ground Connection			
Notice - same as heating circuit module HCS 543 X16 “ground connection”			

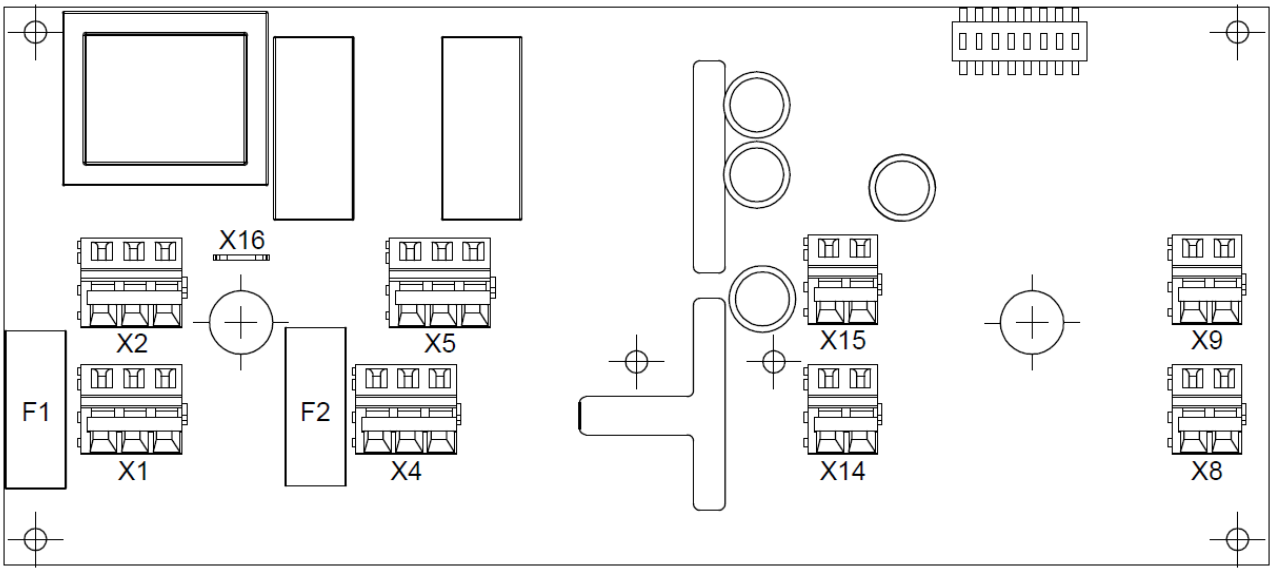
10.10.3 Solar module external (HZS 545)



X1 – 230 V AC-Mains supply			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor

X4 – 230 V AC-Triac-Output: Pump (RO01)			
	**Pin**	**Signal**	**Function**
	1	L_{Triac}	Triac – Output (1,5A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X5 – 230 V AC-Relay Output: Switching valve Open and Close (RO02 and RO03)			
	**Pin**	**Signal**	**Function**
	1	L_{Open}	Relay output Switching valve Open (230V AC / 1A / 4 Pole)
	2	L_{Close}	Relay output Switching valve Close (230V AC / 1A / 4 Pole)
	3	N	Neutral conductor
	4	PE	Earthed conductor
X6 – 230 V AC-Relay output: Pump (RO01)			
	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump
	2	N	Neutral conductor
	3	PE	Earthed conductor
X8 – Temperature input Collector (AI1)			
	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-50 … +200°C)
	2	AGND	AGND
X9 – Temperature input Back flow collector (AI2)			
	Pin	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-50 … +200°C)
	2	AGND	AGND
X10 – Temperature input Tank temperature 1 (AI3)			
	Pin	**Signal**	**Function**
	1	AI3	Analog input AI3 PT1000 (-10 … +120°C)
	2	AGND	AGND
X11 – Temperature input Tank temperature 2 (AI4)			
	**Pin**	**Signal**	**Function**
	1	AI4	Analog input AI4 PT1000 (-10 … +120°C)
	2	AGND	AGND
X13 – digital input – Heat meter input			
	**Pin**	**Signal**	**Function**
	1	DI	Digital input: Heat meter
	2	GND	GND
X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection			
	**Pin**	**Signal**	**Function**
	1	CAN A	CAN Low
	2	CAN B	CAN High
X16 – Ground connection			
Notice - same as heating circuit module HCS 543 X16 “ground connection”			

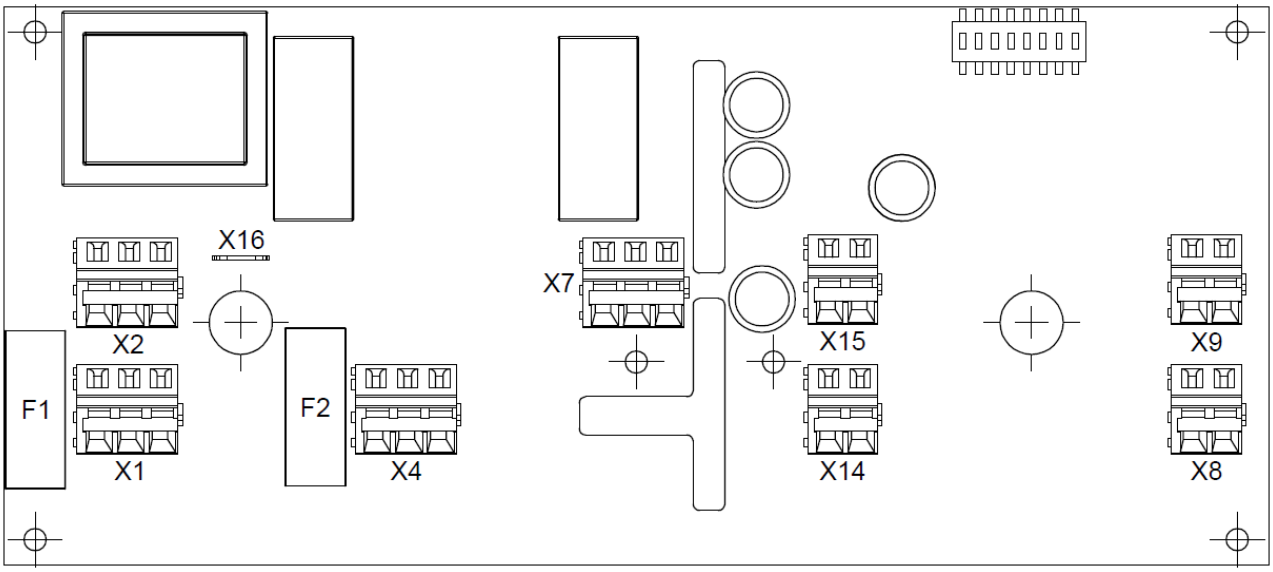
10.10.4 Hot water tank module external (HZS 546)

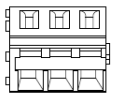
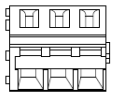
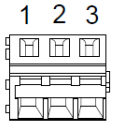
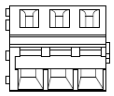


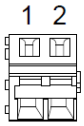
X1 – 230 V AC-Mains supply			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X4 – 230 V AC-Relay output: Hot water tank loading pump (RO01)			
1 2 3	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Hot water tank pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X5 – 230 V AC-Relay output: Circulation pump (RO03)			
1 2 3	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Circulation pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X8 – Temperature input Hot water tank temperature (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
	2	AGND	AGND
X9 – Temperature input Circulation temperature (AI2)			
1 2	**Pin**	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (-10 … +120°C)
	2	AGND	AGND

X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection			
1 2	**Pin**	**Signal**	**Function**
	1	CAN A	CAN Low
	2	CAN B	CAN High
X16 – Ground connection			
Notice - same as heating circuit module HCS 543 X16 “ground connection”			

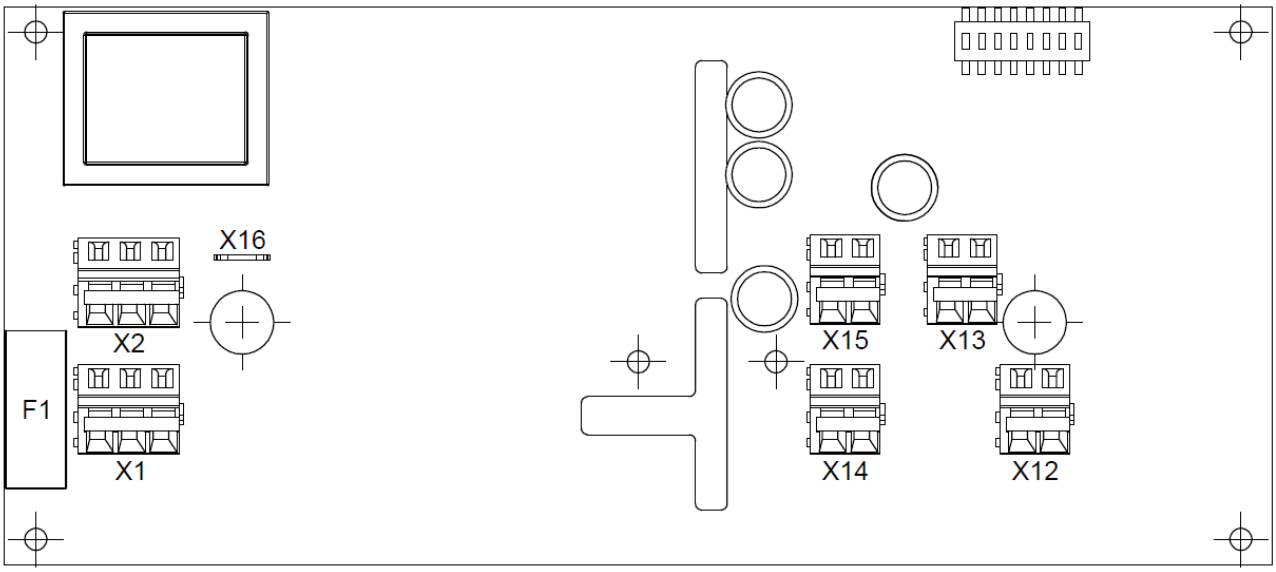
10.10.5 Additional boiler module external (HZS 547)

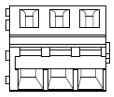
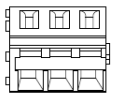


X1 – 230 V AC-Mains supply			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X4 – 230 V AC-Relay output: Additional boiler pump (RO01)			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Additional boiler pump (230V AC / 3A / 3 Pole)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X7 – potential-free Relay output: Burner requirement (RO04)			
1 2 3 	**Pin**	**Signal**	**Function**
	1	NO	Normally Open
	2	C	Common
	3	NC	Normally Closed

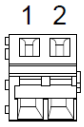
X8 – Temperature input Additional boiler temperature (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI1	Analog input AI1 PT1000 (-10 … +120°C)
	2	AGND	AGND
X9 – Temperature input Flue gas temperature (AI2)			
1 2	**Pin**	**Signal**	**Function**
	1	AI2	Analog input AI2 PT1000 (0 … +600°C)
	2	AGND	AGND
X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection			
1 2 	**Pin**	**Signal**	**Function**
	1	CAN A	CAN Low
	2	CAN B	CAN High
X16 – Ground connection			
Notice - same as heating circuit module HCS 543 X16 “ground connection”			

10.10.6 Request module external (HZS 548)



X1 – 230 V AC-Mains supply			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor
X2 – 230 V AC-Mains derivation			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L	Phase
	2	N	Neutral conductor
	3	PE	Earthed conductor

X12 – Analog input 4 – 20 mA (AI5)



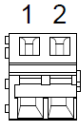
Pin	Signal	Function
1	AI1	Analog input 0-20mA
2	AGND	AGND

Note:

For a demand over 4-20 mA an input wiring of 500 Ohm on X12 is necessary. The resistor is included.

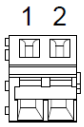
	Current signal in mA	*Voltage signal in V*
Lower limit	4	2
Upper limit	20	10
No demand (0°C)	3	1,5

X13 – Digital Input – External demand



Pin	Signal	Function
1	DI	Digital input (open collector)
2	AGND	GND

X14 (CAN IN) and X15 (CAN OUT) – CAN-Bus-Connection



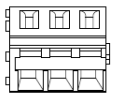
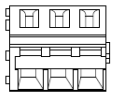
Pin	Signal	Function
1	CAN A	CAN Low
2	CAN B	CAN High

X16 – Ground connection

Notice - same as heating circuit module HCS 543 X16 “ground connection”

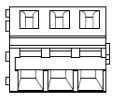
10.10.7 Hydr. Compensator module external (HZS546)

Compared with the external hot water tank module (HZS534) only the following pins are used for the external hydr. compensator module:

X4 – 230 V AC-Relay output: Pump 1 (Primary pump) (RO01)			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump 1 (Primary pump)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X5 – 230 V AC-Relay output: Pump 2 (Secondary pump) (RO03)			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump 2 (Secondary pump)
	2	N	Neutral conductor
	3	PE	Earthed conductor
X8 – Temperature input Hydr. Compensator temperature (AI1)			
1 2	**Pin**	**Signal**	**Function**
	1	AI1	Hydr. Compensator temperature
	2	AGND	AGND

10.10.8 Net pump / Zone valve external (HZS546)

Compared with the external hot water tank module (HZS534) only the following pin is used for the external module Net pump/Zone valve:

X4 – 230 V AC-Relay output: Pump / Zone valve (RO01)			
1 2 3 	**Pin**	**Signal**	**Function**
	1	L_{Pump}	Relay output Pump / Zone valve
	2	N	Neutral conductor
	3	PE	Earthed conductor

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